600 VOLT FEEDER SCHEDULE

AMPERES	3-PHASE, 3-WIRE + GROUND: SYMB	CONDUIT	PHASE & NEUTRAL WIRE	GROUND WIRE	3-PHASE, 4-WIRE + GROUND: SYMB	CONDUIT	PHASE & NEUTRAL WIRE	GROUND WIRE	3-PHASE, 4-WIRE (200% NEUT) + GROUND + IG: SYMB	CONDUIT	PHASE WIRES	NEUTRAL WIRES	GROUND WIRE	ISOLATED GROUND WIRE
20	2A	3/4"	3 #12	#12	2B	3/4"	4 #12	#12						
30	3A	3/4"	3 #10	#10	3B	3/4"	4 #10	#10						
50	5A	1"	3 #8	#10	5B	1"	4 #8	#10						
60	6A	1-1/4"	3 #6	#10	6B	1-1/4"	4 #6	#10						
70	7A	1-1/4"	3 #4	#8	7B	1-1/4"	4 #4	#8						
100	10A	1-1/4"	3 #2	#8	10B	1-1/4"	4 #2	#8	10C	2"	3 #2	2 #2	#8	#8
110	11A	1-1/2"	3 #2	#6	11B	1-1/2"	4 #2	#6						
125	12A	2"	3 #1	#6	12B	2"	4 #1	#6						
150	15A	2"	3 #1/0	#6	15B	2"	4 #1/0	#6						
200	20A	2-1/2"	3 #3/0	#6	20B	2-1/2"	4 #3/0	#6						
225	22A	2-1/2"	3 #4/0	#4	22B	2-1/2"	4 #4/0	#4	22C	2-1/2"	3 #4/0	2 #4/0	#4	#4
250	25A	3"	3 #250 KCM	#4	25B	3"	4 #250 KCM	#4						
300	30A	3"	3 #350 KCM	#4	30B	3"	4 #350 KCM	#4						
400	40A	3"	3 #600 KCM	#2	40B	4"	4 #600 KCM	#2	40C	4"	3 #600 KCM	2 #600 KCM	#2	#2
600	60A	2 SETS 2-1/2"C., 3 #350KCM, 1 #1/0 GND			60B	2 SETS 3"C., 4 #350KCM, 1 #1/0 GND								
800	80A	2 SETS 3"C., 3 #600KCM, 1 #1/0 GND			80B	2 SETS 4"C., 4 #600KCM, 1 #1/0 GND								
1600	160A	4 SETS 3"C., 3 #600KCM, 1 #4/0 GND			160B	4 SETS 4"C., 4 #600KCM, 1 #4/0 GND								
2000	200A	6 SETS 3"C., 3 #500KCM, 1 #500KCM GND			200B	6 SETS 4"C., 4 #500KCM, 1 #500KCM GND								
3000	300A	8 SETS 3"C., 3 #500KCM, 1 #500KCM GND 2 SPARE			300B	8 SETS 4"C., 4 #500KCM, 1 #500KCM GND								

LOAD SUMMARY - UTILITY BUILDING

STANDBY PANEL UB-SH2

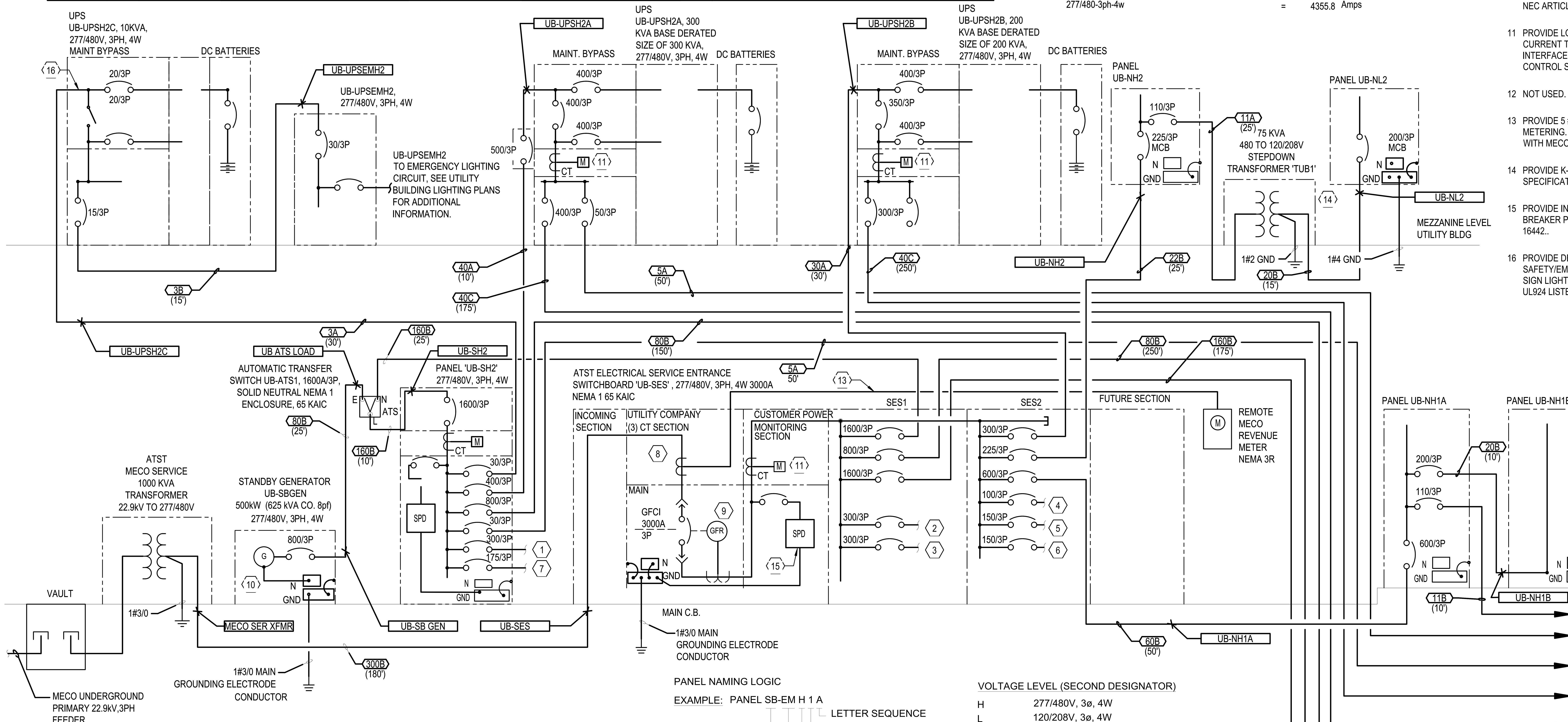
PANEL SB-SH1	@ 100%	Demand	586.2	KVA
UPS UB-UPSH2A	@ 100%	Demand	149.6	KVA
UPS UB-UPSH2C (EM LIGHTING)	@ 125%	Demand	3.7	KVA
PANEL UB SL1	@ 100%	Demand	26.4	KVA
MECHANICAL (CH-01, AHU-2, CP-1, CP-7)	@ 100%	Demand	369.3	KVA
TOTAL			1135.3	KVA
277/480-3ph-4w	= 1365.5	Amps		

TOTAL SES LOAD SUMMARY

LARGEST MOTOR (CH-02)	@ 125%	Demand	264.0	KVA
MECHANICAL (CH-02 THRU CH-06)	@ 100%	Demand	655.1	KVA
PANEL UB-NH1A	@ 100%	Demand	309.9	KVA
PANEL UB-NH2	@ 100%	Demand	41.8	KVA
UPS UB-USPSH2B	@ 100%	Demand	99.8	KVA
PANEL SB-NH1A	@ 100%	Demand	771.4	KVA
PANEL SB-NH4A	@ 100%	Demand	344.1	KVA
PANEL UB-SH2	@ 100%	Demand	1135.3	KVA
TOTAL			3621.4	KVA
277/480-3ph-4w	= 4355.8	Amps		

KEYNOTES

1. TO CHILLER CH-01, SEE PANEL SCHEDULE FOR FEEDER SIZE.
2. TO CHILLER CH-02, SEE PANEL SCHEDULE FOR FEEDER SIZE.
3. TO CHILLER CH-03, SEE PANEL SCHEDULE FOR FEEDER SIZE.
4. TO CHILLER CH-04, SEE PANEL SCHEDULE FOR FEEDER SIZE.
5. TO CHILLER CH-05, SEE PANEL SCHEDULE FOR FEEDER SIZE.
6. TO CHILLER CH-06, SEE PANEL SCHEDULE FOR FEEDER SIZE.
7. TO AIR HANDLING UNIT AHU-2, SEE PANEL SCHEDULE FOR FEEDER SIZE.
8. PROVIDE ELECTRIC UTILITY COMPANY CT SECTION PER MECO REVENUE METERING REQUIREMENTS. COORDINATE ALL METERING REQUIREMENTS WITH MECO
9. PROVIDE INTERNAL GROUND FAULT PROTECTION SYSTEM WITH 'SES' MAIN CIRCUIT BREAKER PER NEC ARTICLE 230.95
10. PROVIDE STANDBY GENERATOR GROUNDING USING A 3-POLE AUTOMATIC TRANSFER SWITCH CONFIGURATION PER NEC ARTICLE 250.20(D).
11. PROVIDE LOCAL POWER MONITORING INSTRUMENT, CURRENT TRANSFORMERS AND COMMUNICATION INTERFACE COMPONENTS PER POWER MONITORING AND CONTROL SPECIFICATION SECTION 16215.
12. NOT USED.
13. PROVIDE 5 #12, 1 #12 GND. IN 3/4"C FOR REMOTE MECO METERING. COORDINATE ALL METERING REQUIREMENTS WITH MECO.
14. PROVIDE K-13 RATED DRY TYPE TRANSFORMER PER SPECIFICATION 16461.
15. PROVIDE INTERGRAL SURGE PROTECTION DEVICE CIRCUIT BREAKER PER SPECIFICATIONS SECTIONS 16289, 16441, AND 16442..
16. PROVIDE DEDICATED UPS SERVING LIFE SAFETY/EMERGENCY LOADS (E.G. EMERGENCY AND EXIT SIGN LIGHTING) PER NEC ARTICLE 700, NFPA 101 AND 110, UL924 LISTED, AND SPECIFICATION SECTION 16264.



NORMAL FEEDER TO TRANSFORMER 'TUB4' AND PANEL 'UB-NL1' SEE SHEET E713

EMERGENCY FEEDER FROM UB-UPSH2A, TO TRANSFORMER 'TUB2', SEE SHEET E713

STANDBY FEEDER FROM UB-SH2, TO TRANSFORMER 'TUB3', SEE SHEET E713

UPS FEEDERS FROM UTILITY BLDG, TO SUPPORT AND OPERATIONS BLDG, SEE SHEET E704

EMERGENCY FEEDER TO SUPPORT AND OPERATIONS BLDG, SEE SHEET E704

STANDBY FEEDER TO SUPPORT AND OPERATIONS BLDG, SEE SHEET E704

NORMAL FEEDERS TO SUPPORT AND OPERATIONS BLDG, SEE SHEET E702

PANEL NAMING LOGIC

EXAMPLE: PANEL SB-EM H 1 A

- LETTER SEQUENCE
- THIRD DESIGNATOR
- SECOND DESIGNATOR
- FIRST DESIGNATOR
- PREFIX

LOCATION - (PREFIX)

UB-	PANEL LOCATED IN UTILITY BUILDING
SB-	PANEL LOCATED IN S&O BUILDING

TYPE - (FIRST DESIGNATOR)

-N	NORMAL (UTILITY)
-S	STANDBY (GENERATOR)
-UPS	UNINTERRUPTIBLE POWER SUPPLY (UPS)
-EM	EMERGENCY (UPS BACK BY GENERATOR)
-UPSEM	EMERGENCY/UPS FOR EMERG LIGHTING SYS

VOLTAGE LEVEL (SECOND DESIGNATOR)

H	277/480V, 3ø, 4W
L	120/208V, 3ø, 4W

SEQUENCIAL LEVEL NUMBER (THIRD DESIGNATOR)

1	GROUND LEVEL
2	MEZZANINE LEVEL
3	COUDE LEVEL
4	UTILITY LEVEL
5	CABLE WRAP LEVEL
6	CATWALK LEVEL
7	TELESCOPE LEVEL

SEQUENCIAL NUMBER (FORTH DESIGNATOR)

A	FIRST PANEL SAME VOLTAGE
B	SECOND PANEL SAME VOLTAGE

1 ELECTRICAL ONE LINE DIAGRAM 1 - UTILITY BUILDING

SCALE: N.T.S.

FAULT CURRENT TABLE

BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC
MECO SER XFMR	42656.1 SYM AMPS	UB ATS LOAD	32853.2 SYM AMPS	UB-NH1A	32,817.3 SYM AMPS
UB-SES	39,917 SYM AMPS	UB-UPSH2A	10.8 SYM AMPS	UB-NH1B	29,198.2 SYM AMPS
UB-SH2	30,146.7 SYM AMPS	UB-UPSH2B	7.2 SYM AMPS	UB-NH2	31,351.8 SYM AMPS
UB-SB GEN	5005.5 SYM AMPS	UP-UPSH2C	0.4 SYM AMPS	UB-NL2	5357.9 SYM AMPS
UB-UPSEMH2	0.4 SYM AMPS				

NOTES:
A. ABOVE DUTY IS LESS THAN 0.5 AMPS
B. FAULT CURRENT, ARC FLASH AND VOLTAGE DROP CALCULATIONS WERE PERFORMED WITH SKM SYSTEMS ANALYSIS, INC. POWER * TOOLS FOR WINDOWS (LATEST VERSION)

ENRICO B. LAOS LICENSED PROFESSIONAL ENGINEER No. 11778-E HAWAII U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

SIGNATURE 11/20/13 04/30/2014 EXPIRATION DATE OF LICENSE

ADVANCED TECHNOLOGY SOLAR TELESCOPE

SUPPORT AND OPERATIONS FACILITIES COMPLETION PACKAGE
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Revisions

Description	Date
1 ADDENDUM 13	7/31/13
2 ADDENDUM 17	11/20/13
3	
4	
5	
6	

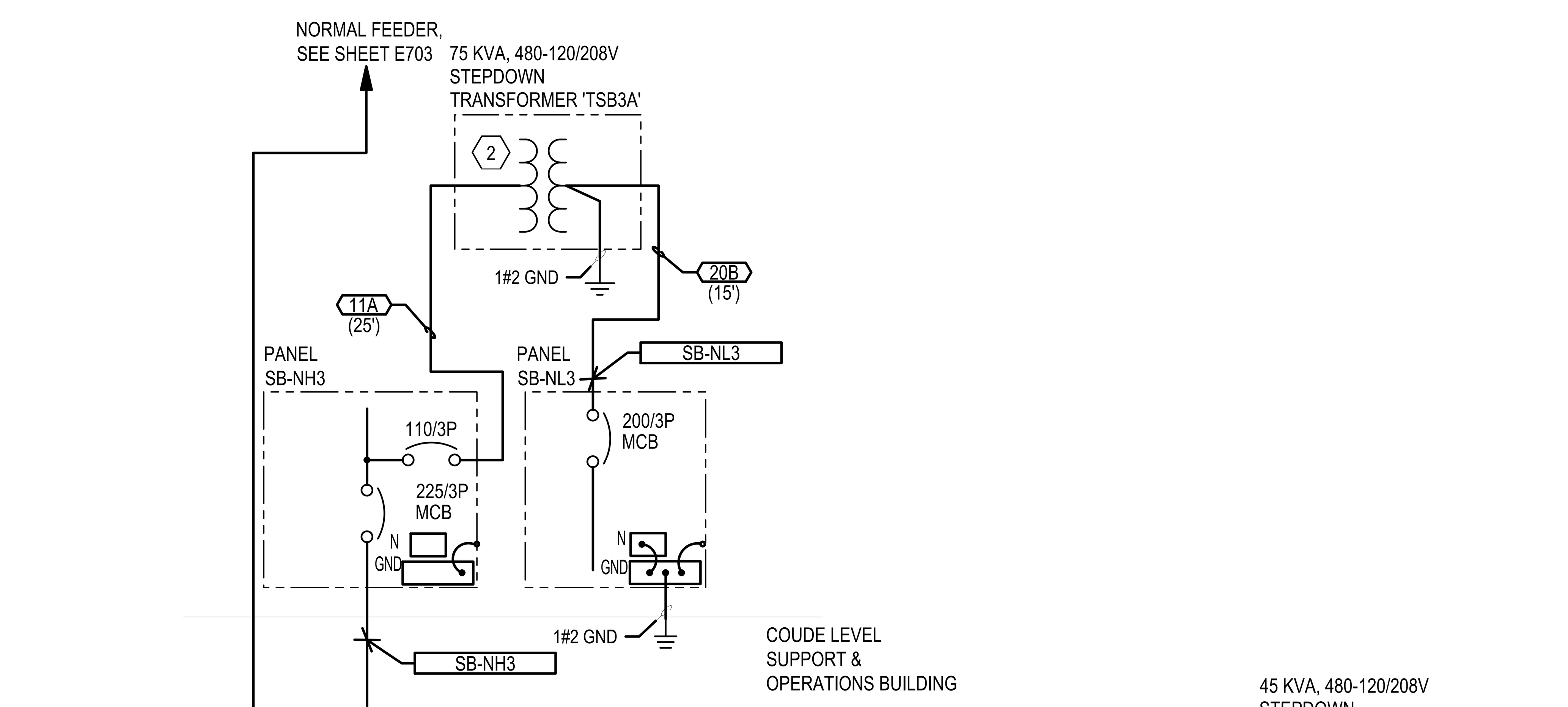
Drawn: ELM
Checked: EBL
Issue Date: 11/02/2012

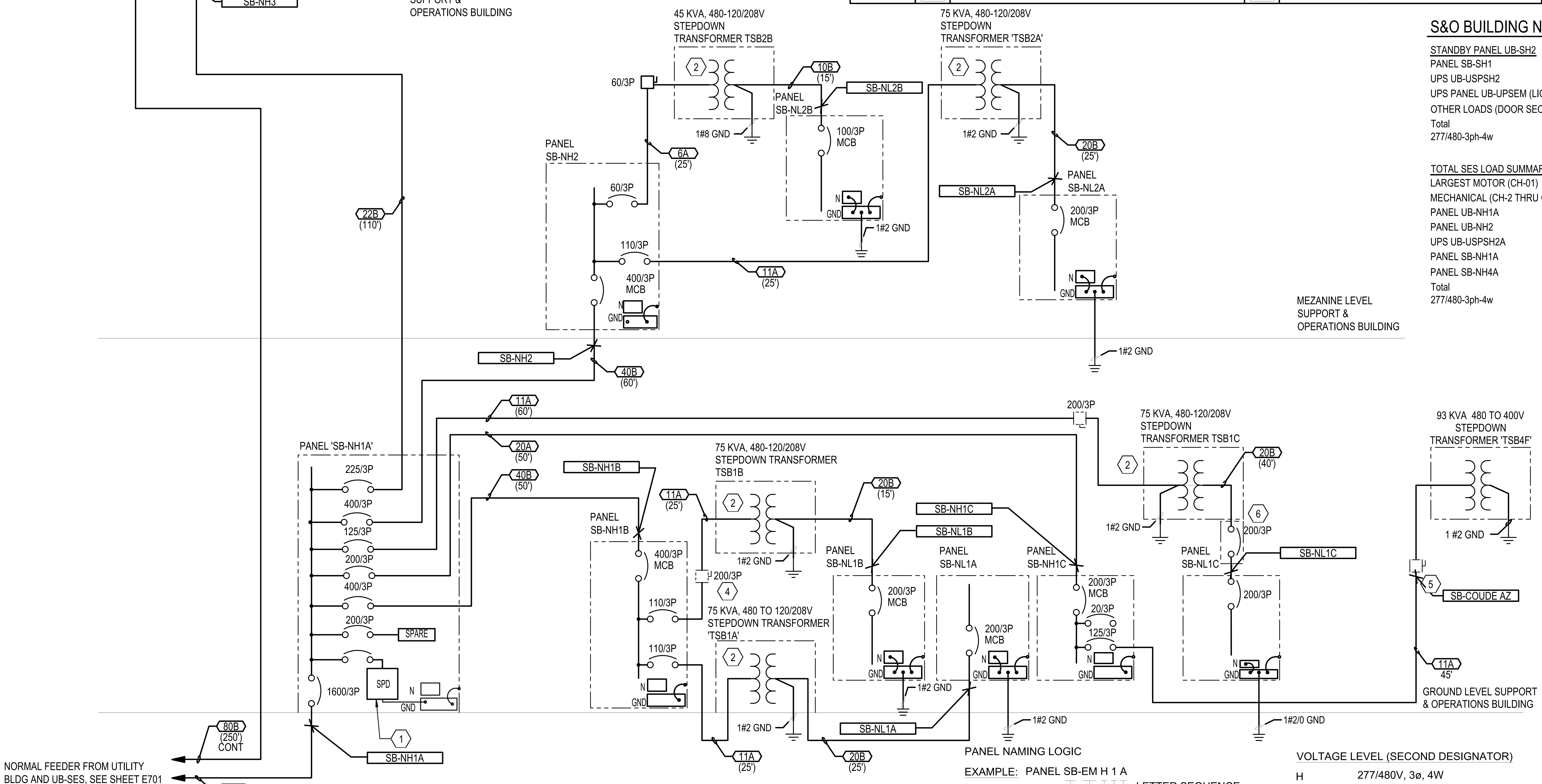
Drawing Title: ELECTRICAL ONE LINE DIAGRAM 1 - UTILITY BLDG

Sheet Number: E701

M3PN 09077

4/16/2015 3:10:33 PM





AMPERES	3-PHASE, 3-WIRE + GROUND				3-PHASE, 4-WIRE + GROUND				3-PHASE, 4-WIRE (200% NEUT) + GROUND + IG					
	SYMB	CONDUIT	PHASE & NEUTRAL WIRE	GROUND WIRE	SYMB	CONDUIT	PHASE & NEUTRAL WIRE	GROUND WIRE	SYMB	CONDUIT	PHASE WIRES	NEUTRAL WIRES	GROUND WIRE	ISOLATED GROUND WIRE
20	2A	3/4"	3 #12	#12	2B	3/4"	4 #12	#12						
30	3A	3/4"	3 #10	#10	3B	3/4"	4 #10	#10						
50	5A	1"	3 #8	#10	5B	1"	4 #8	#10						
60	6A	1-1/4"	3 #6	#10	6B	1-1/4"	4 #6	#10						
70	7A	1-1/4"	3 #4	#8	7B	1-1/4"	4 #4	#8						
100	10A	1-1/4"	3 #2	#8	10B	1-1/4"	4 #2	#8	10C	2"	3 #2	2 #2	#8	#8
110	11A	1-1/2"	3 #2	#6	11B	1-1/2"	4 #2	#6						
125	12A	2"	3 #1	#6	12B	2"	4 #1	#6						
150	15A	2"	3 #1/0	#6	15B	2"	4 #1/0	#6						
200	20A	2-1/2"	3 #3/0	#6	20B	2-1/2"	4 #3/0	#6						
225	22A	2-1/2"	3 #4/0	#4	22B	2-1/2"	4 #4/0	#4	22C	2-1/2"	3 #4/0	2 #4/0	#4	#4
250	25A	3"	3 #250 KCM	#4	25B	3"	4 #250 KCM	#4						
300	30A	3"	3 #350 KCM	#4	30B	3"	4 #350 KCM	#4						
400	40A	3"	3 #600 KCM	#2	40B	4"	4 #600 KCM	#2	40C	4"	3 #600 KCM	2 #600 KCM	#2	#2
600	60A	2 SETS 2-1/2"C., 3 #350KCM, 1 #1/0 GND			60B	2 SETS 3"C., 4 #350KCM, 1 #1/0 GND								
800	80A	2 SETS 3"C., 3 #600KCM, 1 #1/0 GND			80B	2 SETS 4"C., 4 #600KCM, 1 #1/0 GND								
1600	160A	4 SETS 3"C., 3 #600KCM, 1 #4/0 GND			160B	4 SETS 4"C., 4 #600KCM, 1 #4/0 GND								
2000	200A	6 SETS 3"C., 3 #500KCM, 1 #500KCM GND			200B	6 SETS 4"C., 4 #500KCM, 1 #500KCM GND								
3000	300A	8 SETS 3"C., 3 #500KCM, 1 #500KCM GND 2 SPARE			300B	8 SETS 4"C., 4 #500KCM, 1 #500KCM GND								

S&O BUILDING NORMAL POWER

STANDBY PANEL UB-SH2

PANEL SB-SH1	@ 100%	Demand	491.8	KVA
UPS UB-USPSH2	@ 100%	Demand	332.6	KVA
UPS PANEL UB-UPSEM (LIGHTING)	@ 125%	Demand	7.7	KVA
OTHER LOADS (DOOR SECURITY)	@ 100%	Demand	0.5	KVA
Total			832.6	KVA
277/480-3ph-4w	=	1001.5	Amps	

TOTAL SES LOAD SUMMARY

LARGEST MOTOR (CH-01)	@ 125%	Demand	168.9	KVA
MECHANICAL (CH-2 THRU CH-6, AHU-02)	@ 100%	Demand	659.9	KVA
PANEL UB-NH1A	@ 100%	Demand	330.1	KVA
PANEL UB-NH2	@ 100%	Demand	76.6	KVA
UPS UB-USPSH2A	@ 100%	Demand	207.8	KVA
PANEL SB-NH1A	@ 100%	Demand	754.5	KVA
PANEL SB-NH4A	@ 100%	Demand	432.9	KVA
Total			2630.7	KVA
277/480-3ph-4w	=	3164.2	Amps	

KEYNOTES

1 PROVIDE INTEGRAL SURGE PROTECTION DEVICE WITH CIRCUIT BREAKER PER SPECIFICATION SECTIONS 16289, 16441, AND 16442.

2 PROVIDE K-20 RATED DRY TYPE TRANSFORMER PER SPECIFICATION SECTION 16461.

3 NOT USED.

4 PROVIDE LOCAL NON-FUSED DISCONNECT SWITCH.

5 PROVIDE LOCAL NON-FUSED DISCONNECT SWITCH FOR COUDE ROTATOR DRIVE SYSTEM.

6 ENCLOSED BREAKER

FAULT CURRENT TABLE

BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC
SB-NH1A	30,327.6 SYM AMPS	SB-NL1A	5,087.3 SYM AMPS	SB-NL3	5,033.1 SYM AMPS
SB-NH1B	23,677.8 SYM AMPS	SB-NL1B	3,138.2 SYM AMPS		
SB-NH1C	23,677.8 SYM AMPS	SB-NL1C	9,241.5 SYM AMPS		
SB-NH2	20,900.6 SYM AMPS	SB-NL2A	5,027.1 SYM AMPS		
SB-NH3	16,301.2 SYM AMPS	SB-NL2B	3,116.2 SYM AMPS		

NOTES: A. FAULT CURRENT, ARC FLASH AND VOLTAGE DROP CALCULATIONS WER PERFORMED WITH SKM SYSTEMS ANALYSIS, INC. POWER * TOOLS FOR WINDOWS (LATEST VERSION)

PANEL NAMING LOGIC

EXAMPLE: PANEL SB-EM H 1 A

- LETTER SEQUENCE
- THIRD DESIGNATOR
- SECOND DESIGNATOR
- FIRST DESIGNATOR
- PREFIX

LOCATION - (PREFIX)

UB-	PANEL LOCATED IN UTILITY BUILDING
SB-	PANEL LOCATED IN S&O BUILDING

TYPE - (FIRST DESIGNATOR)

-N	NORMAL (UTILITY)
-S	STANDBY (GENERATOR)
-UPS	UNINTERRUPTIBLE POWER SUPPLY (UPS)
-EM	EMERGENCY (UPS BACK BY GENERATOR)
-UPSEM	EMERGENCY/UPS FOR EMERG LIGHTING SYS

VOLTAGE LEVEL (SECOND DESIGNATOR)

H	277/480V, 3ø, 4W
L	120/208V, 3ø, 4W

SEQUENCIAL LEVEL NUMBER (THIRD DESIGNATOR)

1	GROUND LEVEL
2	MEZZANINE LEVEL
3	COUDE LEVEL
4	UTILITY LEVEL
5	CABLE WRAP LEVEL
6	CATWALK LEVEL
7	TELESCOPE LEVEL

SEQUENCIAL NUMBER (FORTH DESIGNATOR)

A	FIRST PANEL SAME VOLTAGE
B	SECOND PANEL SAME VOLTAGE

1 ELECTRICAL ONE LINE DIAGRAM - S & O BLDG NORMAL POWER SHEET 1

SCALE: N.T.S.

ENRICO B. LAOS LICENSED PROFESSIONAL ENGINEER No. 11778-E HAWAII U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

SIGNATURE 11/20/13

04/30/2014 EXPIRATION DATE OF LICENSE

ADVANCED TECHNOLOGY SOLAR TELESCOPE

SUPPORT AND OPERATIONS FACILITIES COMPLETION PACKAGE
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Revisions

Description	Date
1 ADDENDUM 17	11/20/13
2	
3	
4	
5	
6	

Drawn: ELM
Checked: EBL
Issue Date: 11/02/2012

Drawing Title: ELECTRICAL ONE LINE DIAGRAM - S&O BLDG NORMAL POWER SHEET 1

Sheet Number: E702

M3PN 09077

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600 VOLT FEEDER SCHEDULE

	3-PHASE, 3-WIRE + GROUND				3-PHASE, 4-WIRE + GROUND				3-PHASE, 4-WIRE (200% NEUT) + GROUND + IG					
AMPERES	SYMB	CONDUIT	PHASE & NEUTRAL WIRE	GROUND WIRE	SYMB	CONDUIT	PHASE & NEUTRAL WIRE	GROUND WIRE	SYMB	CONDUIT	PHASE WIRES	NEUTRAL WIRES	GROUND WIRE	ISOLATED GROUND WIRE
20	2A	3/4"	3 #12	#12	2B	3/4"	4 #12	#12						
30	3A	3/4"	3 #10	#10	3B	3/4"	4 #10	#10						
50	5A	1"	3 #8	#10	5B	1"	4 #8	#10						
60	6A	1-1/4"	3 #6	#10	6B	1-1/4"	4 #6	#10						
70	7A	1-1/4"	3 #4	#8	7B	1-1/4"	4 #4	#8						
100	10A	1-1/4"	3 #2	#8	10B	1-1/4"	4 #2	#8	10C	2"	3 #2	2 #2	#8	#8
110	11A	1-1/2"	3 #2	#6	11B	1-1/2"	4 #2	#6						
125	12A	2"	3 #1	#6	12B	2"	4 #1	#6						
150	15A	2"	3 #1/0	#6	15B	2"	4 #1/0	#6						
200	20A	2-1/2"	3 #3/0	#6	20B	2-1/2"	4 #3/0	#6					#4	
225	22A	2-1/2"	3 #4/0	#4	22B	2-1/2"	4 #4/0	#4	22C	2-1/2"	3 #4/0	2 #4/0	#4	#4
250	25A	3"	3 #250 KCM	#4	25B	3"	4 #250 KCM	#4						
300	30A	3"	3 #350 KCM	#4	30B	3"	4 #350 KCM	#4					#2	
400	40A	3"	3 #600 KCM	#2	40B	4"	4 #600 KCM	#2	40C	4"	3 #600 KCM	2 #600 KCM	#2	#2
600	60A	2 SETS 2-1/2"C., 3 #350KCM, 1 #1/0 GND			60B	2 SETS 3"C., 4 #350KCM, 1 #1/0 GND								
800	80A	2 SETS 3"C., 3 #600KCM, 1 #1/0 GND			80B	2 SETS 4"C., 4 #600KCM, 1 #1/0 GND								
1600	160A	4 SETS 3"C., 3 #600KCM, 1 #4/0 GND			160B	4 SETS 4"C., 4 #600KCM, 1 #4/0 GND								
2000	200A	6 SETS 3"C., 3 #500KCM, 1 #500KCM GND			200B	6 SETS 4"C., 4 #500KCM, 1 #500KCM GND								
3000	300A	8 SETS 3"C., 3 #500KCM, 1 #500KCM GND 2 SPARE			300B	8 SETS 4"C., 4 #500KCM, 1 #500KCM GND								

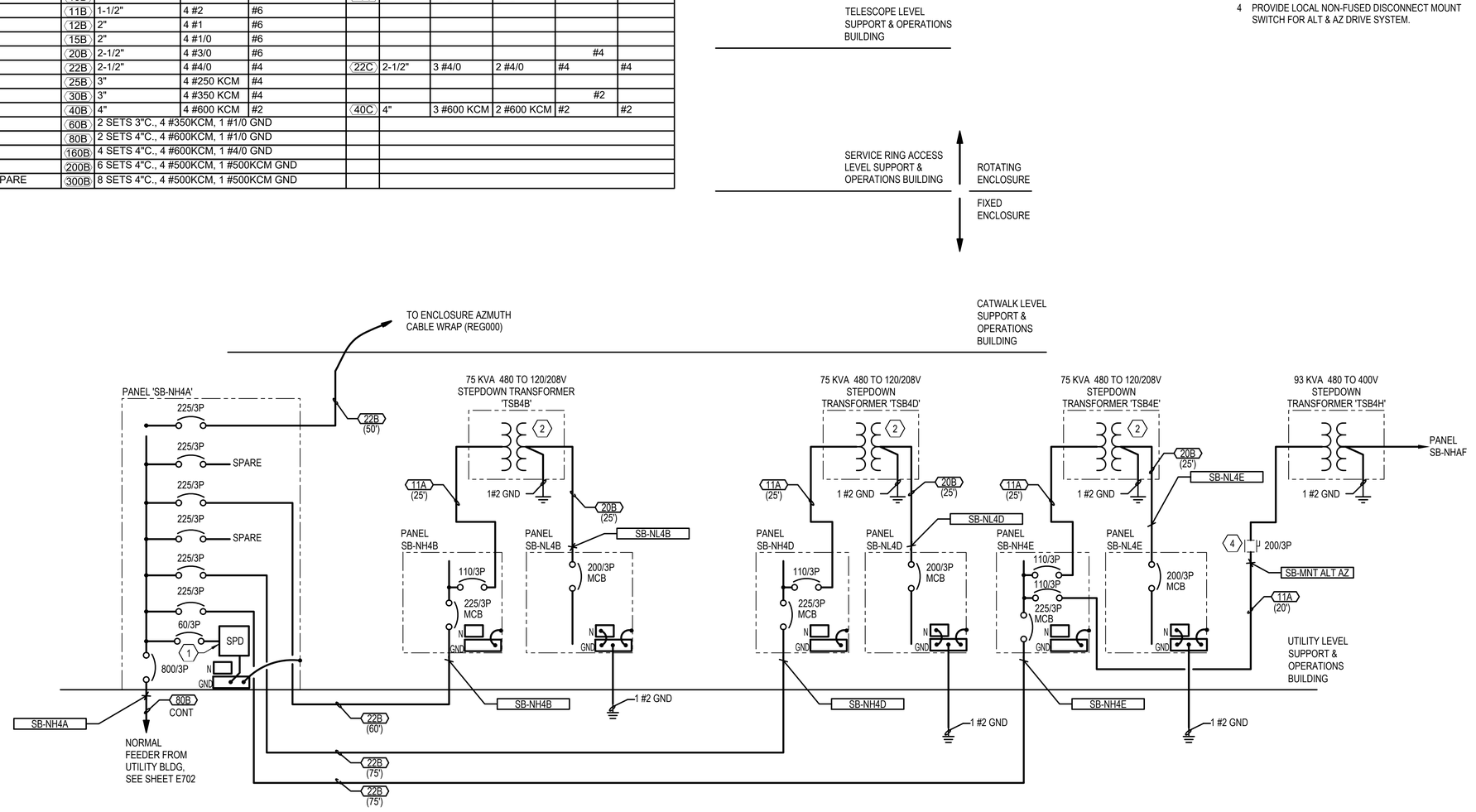
KEYNOTES

1 PROVIDE INTEGRAL SURGE PROTECTION DEVICE WITH CIRCUIT BREAKER PER SPECIFICATION SECTIONS 16289, 16441, AND 16442.

2 PROVIDE K-20 RATED DRY TYPE TRANSFORMER PER SPECIFICATION SECTION 16461

3 NOT USED

4 PROVIDE LOCAL NON-FUSED DISCONNECT MOUNT SWITCH FOR ALT & AZ DRIVE SYSTEM.



1 ELECTRICAL ONE LINE DIAGRAM - S & O BLDG NORMAL POWER SHEET 2

SCALE: N.T.S.

FAULT CURRENT TABLE

BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC
SB-NH4A	20,798.7 SYM AMPS	SB-NL4D	4,796.3 SYM AMPS	SB-MNT ALT AZ	13,780.2 SYS AMPS
SB-NH4B	15,780.3 SYM AMPS	SB-NL4E	4,796.3 SYM AMPS		
SB-NH4D	14,844.6 SYM AMPS				
SB-NH4E	14,844.6 SYM AMPS				
SB-NL4B	4,840.3 SYM AMPS				

NOTES: A. FAULT CURRENT, ARC FLASH AND VOLTAGE DROP CALCULATIONS WER PERFORMED WITH SKM SYSTEMS ANALYSIS, INC. POWER * TOOLS FOR WINDOWS (LATEST VERSION)

PANEL NAMING LOGIC

EXAMPLE: PANEL SB-EM H 1 A

- A — LETTER SEQUENCE
- 1 — THIRD DESIGNATOR
- H — SECOND DESIGNATOR
- EM — FIRST DESIGNATOR
- SB — PREFIX

LOCATION - (PREFIX)

UB-	PANEL LOCATED IN UTILITY BUILDING
SB-	PANEL LOCATED IN S&O BUILDING

TYPE - (FIRST DESIGNATOR)

-N	NORMAL (UTILITY)
-S	STANDBY (GENERATOR)
-UPS	UNINTERRUPTIBLE POWER SUPPLY (UPS)
-EM	EMERGENCY (UPS BACK BY GENERATOR)
-UPSEM	EMERGENCY/UPS FOR EMERG LIGHTING SYS

VOLTAGE LEVEL (SECOND DESIGNATOR)

H	277/480V, 3ø, 4W
L	120/208V, 3ø, 4W

SEQUENCIAL LEVEL NUMBER (THIRD DESIGNATOR)

1	GROUND LEVEL
2	MEZZANINE LEVEL
3	COUDE LEVEL
4	UTILITY LEVEL
5	CABLE WRAP LEVEL
6	CATWALK LEVEL
7	TELESCOPE LEVEL

SEQUENCIAL NUMBER (FORTH DESIGNATOR)

A	FIRST PANEL SAME VOLTAGE
B	SECOND PANEL SAME VOLTAGE

ENRICO B. LAOS LICENSED PROFESSIONAL ENGINEER No. 11778-E HAWAII U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

SIGNATURE 11/20/13

04/30/2014 EXPIRATION DATE OF LICENSE

ADVANCED TECHNOLOGY SOLAR TELESCOPE

SUPPORT AND OPERATIONS FACILITIES COMPLETION PACKAGE
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ARCHITECTURE ENGINEERING CONSTRUCTION MANAGEMENT

Revisions

	Description	Date
1	ADDENDUM 17	11/20/13
2		
3		
4		
5		
6		

Drawn: ELM
Checked: EBL
Issue Date: 11/02/2012

Drawing Title

ELECTRICAL ONE LINE DIAGRAM - S&O BLDG NORMAL POWER SHEET 2

Sheet Number

E703

M3PN 09077

4/16/2015 3:10:48 PM

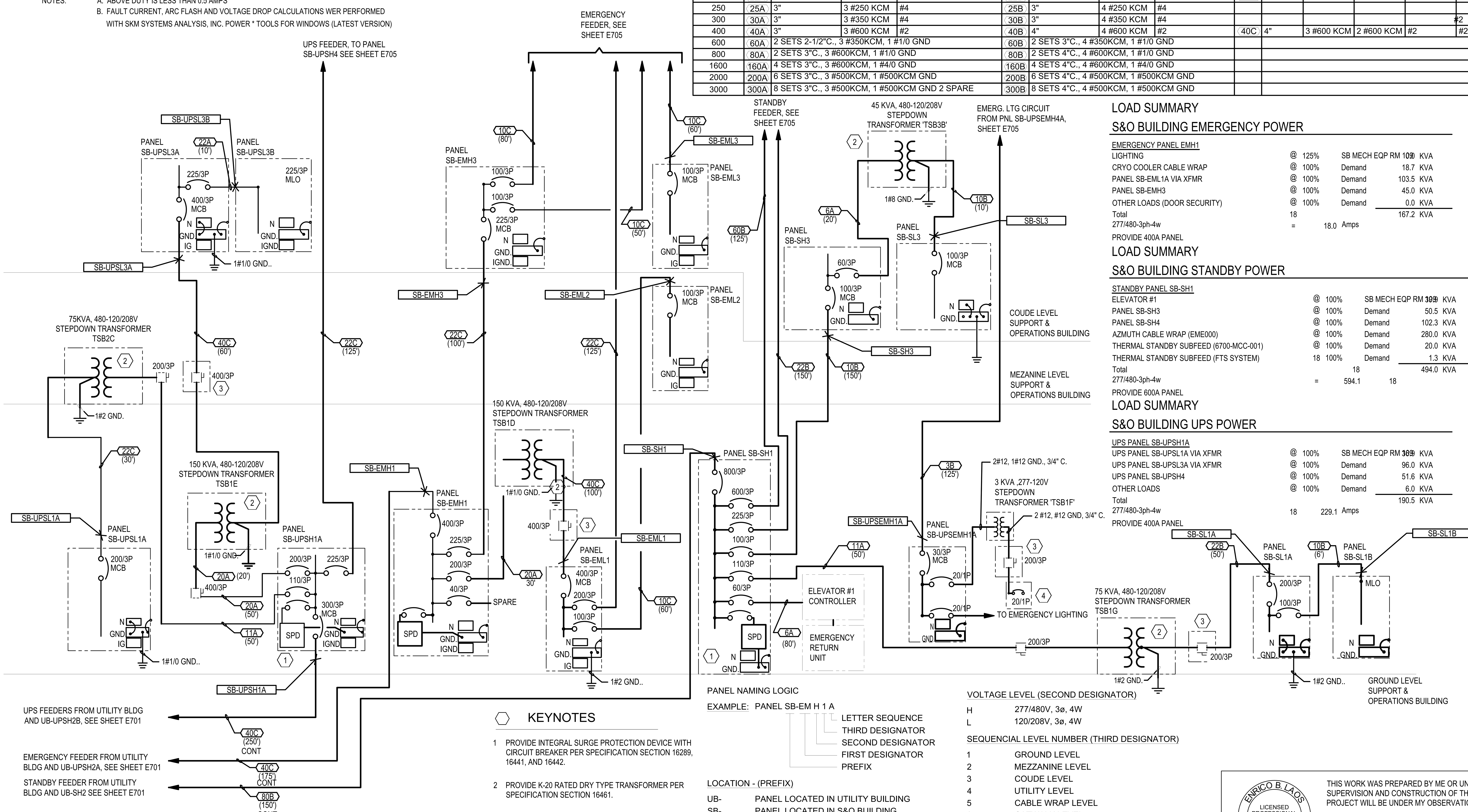
600 VOLT FEEDER SCHEDULE

AMPERES	3-PHASE, 3-WIRE + GROUND				3-PHASE, 4-WIRE + GROUND				3-PHASE, 4-WIRE (200% NEUT) + GROUND + IG					
	SYMB	CONDUIT	PHASE & NEUTRAL WIRE	GROUND WIRE	SYMB	CONDUIT	PHASE & NEUTRAL WIRE	GROUND WIRE	SYMB	CONDUIT	PHASE WIRES	NEUTRAL WIRES	GROUND WIRE	ISOLATED GROUND WIRE
20	2A	3/4"	3 #12	#12	2B	3/4"	4 #12	#12						
30	3A	3/4"	3 #10	#10	3B	3/4"	4 #10	#10						
50	5A	1"	3 #8	#10	5B	1"	4 #8	#10						
60	6A	1-1/4"	3 #6	#10	6B	1-1/4"	4 #6	#10						
70	7A	1-1/4"	3 #4	#8	7B	1-1/4"	4 #4	#8						
100	10A	1-1/4"	3 #2	#8	10B	1-1/4"	4 #2	#8	10C	2"	3 #2	2 #2	#8	#8
110	11A	1-1/2"	3 #2	#6	11B	1-1/2"	4 #2	#6						
125	12A	2"	3 #1	#6	12B	2"	4 #1	#6						
150	15A	2"	3 #1/0	#6	15B	2"	4 #1/0	#6						
200	20A	2-1/2"	3 #3/0	#6	20B	2-1/2"	4 #3/0	#6						#4
225	22A	2-1/2"	3 #4/0	#4	22B	2-1/2"	4 #4/0	#4	22C	2-1/2"	3 #4/0	2 #4/0	#4	#4
250	25A	3"	3 #250 KCM	#4	25B	3"	4 #250 KCM	#4						
300	30A	3"	3 #350 KCM	#4	30B	3"	4 #350 KCM	#4						#2
400	40A	3"	3 #600 KCM	#2	40B	4"	4 #600 KCM	#2	40C	4"	3 #600 KCM	2 #600 KCM	#2	#2
600	60A	2 SETS 2-1/2"C., 3 #350KCM, 1 #1/0 GND			60B	2 SETS 3"C., 4 #350KCM, 1 #1/0 GND								
800	80A	2 SETS 3"C., 3 #600KCM, 1 #1/0 GND			80B	2 SETS 4"C., 4 #600KCM, 1 #1/0 GND								
1600	160A	4 SETS 3"C., 3 #600KCM, 1 #4/0 GND			160B	4 SETS 4"C., 4 #600KCM, 1 #4/0 GND								
2000	200A	6 SETS 3"C., 3 #500KCM, 1 #500KCM GND			200B	6 SETS 4"C., 4 #500KCM, 1 #500KCM GND								
3000	300A	8 SETS 3"C., 3 #500KCM, 1 #500KCM GND 2 SPARE			300B	8 SETS 4"C., 4 #500KCM, 1 #500KCM GND								

FAULT CURRENT TABLE

BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC
SB-UPSH1A	7.2 SYM AMPS	SB-EMH1	10.8 SYM AMPS	SB-SH1	20,477.2 SYM AMPS
SB-UPSL1A	16.6 SYM AMPS	SB-EML1	24.9 SYM AMPS	SB-SH3	6,730.2 SYM AMPS
SB-UPSL3A	16.6 SYM AMPS	SB-EMH3	10.8 SYM AMPS	SB-SL3	2,705.6 SYM AMPS
SB-UPSL3B	16.6 SYM AMPS	SB-EML2		SB-SL1A	
SB-UPSEMH1A	.4 SYM AMPS	SB-EML3		SB-SL1B	

NOTES:
A. ABOVE DUTY IS LESS THAN 0.5 AMPS
B. FAULT CURRENT, ARC FLASH AND VOLTAGE DROP CALCULATIONS WER PERFORMED WITH SKM SYSTEMS ANALYSIS, INC. POWER * TOOLS FOR WINDOWS (LATEST VERSION)



ELECTRICAL ONE LINE DIAGRAM - S & O BLDG EMERG, UPS, STANDBY POWER SHEET 1

1
SCALE:N.T.S.

LOAD SUMMARY
S&O BUILDING EMERGENCY POWER

EMERGENCY PANEL EMH1

LIGHTING	@	125%	SB MECH EQP RM 109	0.0	KVA
CRYO COOLER CABLE WRAP	@	100%	Demand	18.7	KVA
PANEL SB-EML1A VIA XFMR	@	100%	Demand	103.5	KVA
PANEL SB-EMH3	@	100%	Demand	45.0	KVA
OTHER LOADS (DOOR SECURITY)	@	100%	Demand	0.0	KVA
Total	18			167.2	KVA
277/480-3ph-4w	=	18.0	Amps		

PROVIDE 400A PANEL

LOAD SUMMARY
S&O BUILDING STANDBY POWER

STANDBY PANEL SB-SH1

ELEVATOR #1	@	100%	SB MECH EQP RM 109	39.9	KVA
PANEL SB-SH3	@	100%	Demand	50.5	KVA
PANEL SB-SH4	@	100%	Demand	102.3	KVA
AZMUTH CABLE WRAP (EME000)	@	100%	Demand	280.0	KVA
THERMAL STANDBY SUBFEED (6700-MCC-001)	@	100%	Demand	20.0	KVA
THERMAL STANDBY SUBFEED (FTS SYSTEM)	18	100%	Demand	1.3	KVA
Total		18		494.0	KVA
277/480-3ph-4w	=	594.1	18		

PROVIDE 600A PANEL

LOAD SUMMARY
S&O BUILDING UPS POWER

UPS PANEL SB-UPSH1A

UPS PANEL SB-UPSL1A VIA XFMR	@	100%	SB MECH EQP RM 109	36.9	KVA
UPS PANEL SB-UPSL3A VIA XFMR	@	100%	Demand	96.0	KVA
UPS PANEL SB-UPSH4	@	100%	Demand	51.6	KVA
OTHER LOADS	@	100%	Demand	6.0	KVA
Total				190.5	KVA
277/480-3ph-4w	18	229.1	Amps		

PROVIDE 400A PANEL

KEYNOTES

1 PROVIDE INTEGRAL SURGE PROTECTION DEVICE WITH CIRCUIT BREAKER PER SPECIFICATION SECTION 16289, 16441, AND 16442.

2 PROVIDE K-20 RATED DRY TYPE TRANSFORMER PER SPECIFICATION SECTION 16461.

3 ENCLOSED BREAKER

4 PROVIDE CIRCUIT BREAKER ENCLOSURE, NEMA 1 WITH ONE (1) 20A/1P MOLDED CASE CIRCUIT BREAKER LOCATED IN ELEVATOR #1 EQUIPMENT ROOM 113 TO SERVE ELEV. #1 CAB LIGHTING AND LOCAL 30A/2P DISCONNECT SWITCH.

PANEL NAMING LOGIC

EXAMPLE: PANEL SB-EM H 1 A
- LETTER SEQUENCE
- THIRD DESIGNATOR
- SECOND DESIGNATOR
- FIRST DESIGNATOR
- PREFIX

LOCATION - (PREFIX)

UB-	PANEL LOCATED IN UTILITY BUILDING
SB-	PANEL LOCATED IN S&O BUILDING

TYPE - (FIRST DESIGNATOR)

-N	NORMAL (UTILITY)
-S	STANDBY (GENERATOR)
-UPS	UNINTERRUPTIBLE POWER SUPPLY (UPS)
-EM	EMERGENCY (UPS BACK BY GENERATOR)
-UPSEM	EMERGENCY/UPS FOR EMERG LIGHTING SYS

VOLTAGE LEVEL (SECOND DESIGNATOR)

H	277/480V, 3ø, 4W
L	120/208V, 3ø, 4W

SEQUENCIAL LEVEL NUMBER (THIRD DESIGNATOR)

1	GROUND LEVEL
2	MEZZANINE LEVEL
3	COUDE LEVEL
4	UTILITY LEVEL
5	CABLE WRAP LEVEL
6	CATWALK LEVEL
7	TELESCOPE LEVEL

SEQUENCIAL NUMBER (FORTH DESIGNATOR)

A	FIRST PANEL SAME VOLTAGE
B	SECOND PANEL SAME VOLTAGE

ENRICO B. LAOS
LICENSED PROFESSIONAL ENGINEER No. 11778-E
HAWAII U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

SIGNATURE 11/20/13
04/30/2014 EXPIRATION DATE OF LICENSE

ADVANCED TECHNOLOGY SOLAR TELESCOPE

SUPPORT AND OPERATIONS FACILITIES COMPLETION PACKAGE
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1 ADDENDUM 17	11/20/13
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Drawn: ELM
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Drawing Title
ELECTRICAL ONE LINE DIAGRAM - S&O BLDG EMERG, UPS, STANDBY POWER SHEET 1

Sheet Number
E704

M3PN 09077

4/16/2015 3:10:55 PM

600 VOLT FEEDER SCHEDULE

AMPERES	3-PHASE, 3-WIRE + GROUND				3-PHASE, 4-WIRE + GROUND				3-PHASE, 4-WIRE (200% NEUT) + GROUND + IG					
	SYMB	CONDUIT	PHASE & NEUTRAL WIRE	GROUND WIRE	SYMB	CONDUIT	PHASE & NEUTRAL WIRE	GROUND WIRE	SYMB	CONDUIT	PHASE WIRES	NEUTRAL WIRES	GROUND WIRE	ISOLATED GROUND WIRE
20	2A	3/4"	3 #12	#12	2B	3/4"	4 #12	#12	2C	3/4"	3 #12	2 #12	#12	#12
30	3A	3/4"	3 #10	#10	3B	3/4"	4 #10	#10						
50	5A	1"	3 #8	#10	5B	1"	4 #8	#10						
60	6A	1-1/4"	3 #6	#10	6B	1-1/4"	4 #6	#10						
70	7A	1-1/4"	3 #4	#8	7B	1-1/4"	4 #4	#8						
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200	20A	2-1/2"	3 #3/0	#6	20B	2-1/2"	4 #3/0	#6	20C	2 1/2"	3 #3/0	2 #3/0	#6	#6
225	22A	2-1/2"	3 #4/0	#4	22B	2-1/2"	4 #4/0	#4	22C	2-1/2"	3 #4/0	2 #4/0	#4	#4
250	25A	3"	3 #250 KCM	#4	25B	3"	4 #250 KCM	#4						
300	30A	3"	3 #350 KCM	#4	30B	3"	4 #350 KCM	#4						
400	40A	3"	3 #600 KCM	#2	40B	4"	4 #600 KCM	#2	40C	4"	3 #600 KCM	2 #600 KCM	#2	#2
600	60A	2 SETS 2-1/2"C., 3 #350KCM, 1 #1/0 GND			60B	2 SETS 3"C., 4 #350KCM, 1 #1/0 GND								
800	80A	2 SETS 3"C., 3 #600KCM, 1 #1/0 GND			80B	2 SETS 4"C., 4 #600KCM, 1 #1/0 GND								
1600	160A	4 SETS 3"C., 3 #600KCM, 1 #4/0 GND			160B	4 SETS 4"C., 4 #600KCM, 1 #4/0 GND								
2000	200A	6 SETS 3"C., 3 #500KCM, 1 #500KCM GND			200B	6 SETS 4"C., 4 #500KCM, 1 #500KCM GND								
3000	300A	8 SETS 3"C., 3 #500KCM, 1 #500KCM GND 2 SPARE			300B	8 SETS 4"C., 4 #500KCM, 1 #500KCM GND								

KEYNOTES

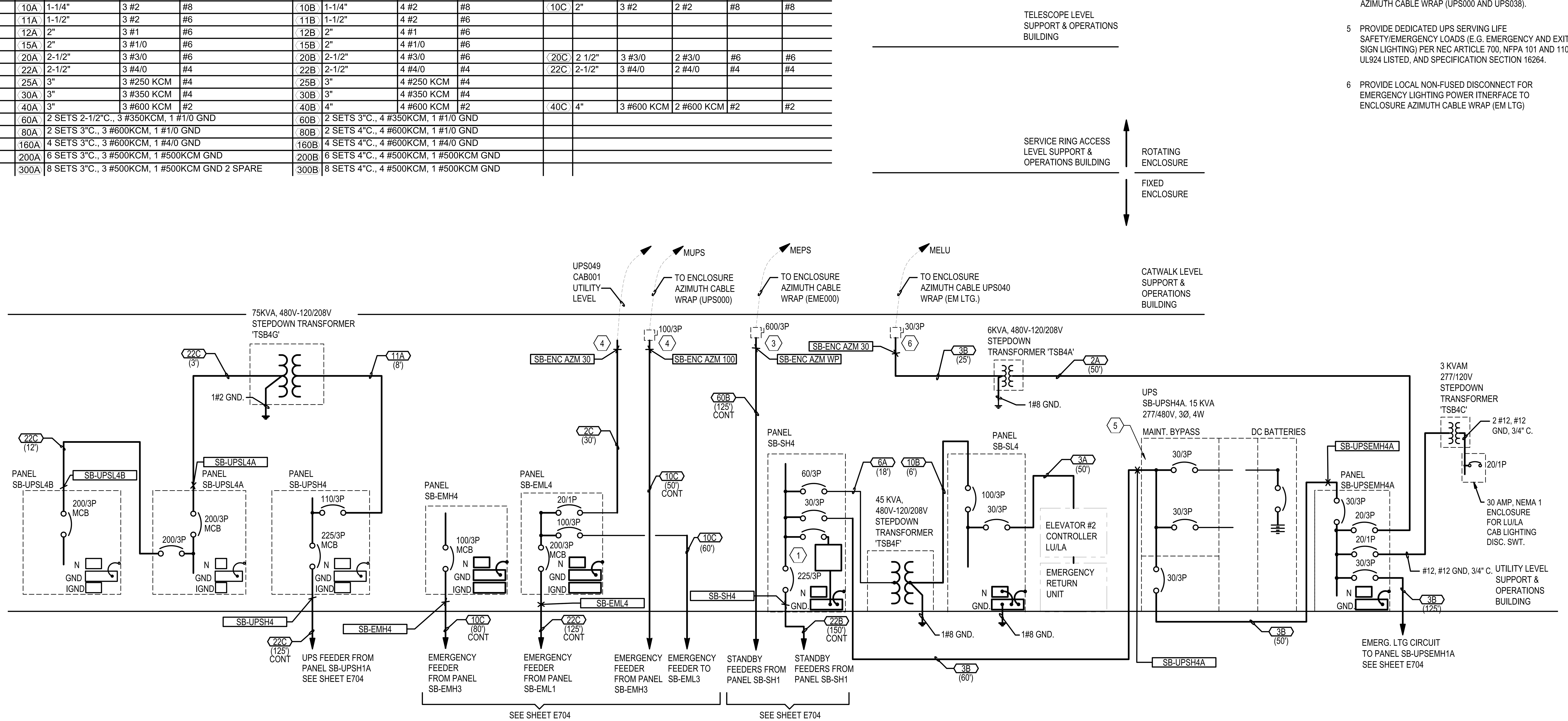
1 PROVIDE INTEGRAL SURGE PROTECTION DEVICE WITH CIRCUIT BREAKER PER SPECIFICATION SECTIONS 16289, 16441, AND 16442.

3 PROVIDE LOCAL NON-FUSED DISCONNECT SWITCH FOR STANDBY POWER INTERFACE TO ENCLOSURE AZIMUTH CABLE WRAP (EME000).

4 PROVIDE LOCAL NON-FUSED DISCONNECT SWITCH FOR EMERGENCY POWER INTERFACE TO ENCLOSURE AZIMUTH CABLE WRAP (UPS000 AND UPS038).

5 PROVIDE DEDICATED UPS SERVING LIFE SAFETY/EMERGENCY LOADS (E.G. EMERGENCY AND EXIT SIGN LIGHTING) PER NEC ARTICLE 700, NFPA 101 AND 110, UL924 LISTED, AND SPECIFICATION SECTION 16264.

6 PROVIDE LOCAL NON-FUSED DISCONNECT FOR EMERGENCY LIGHTING POWER ITNERFACE TO ENCLOSURE AZIMUTH CABLE WRAP (EM LTG)



ELECTRICAL ONE LINE DIAGRAM - S & O BLDG EMERG, UPS, STANDBY POWER SHEET 2

1 SCALE:N.T.S.

PANEL NAMING LOGIC

EXAMPLE: PANEL SB-EM H 1 A

- LETTER SEQUENCE
- THIRD DESIGNATOR
- SECOND DESIGNATOR
- FIRST DESIGNATOR
- PREFIX

LOCATION - (PREFIX)

UB-	PANEL LOCATED IN UTILITY BUILDING
SB-	PANEL LOCATED IN S&O BUILDING

TYPE - (FIRST DESIGNATOR)

-N	NORMAL (UTILITY)
-S	STANDBY (GENERATOR)
-UPS	UNINTERRUPTIBLE POWER SUPPLY (UPS)
-EM	EMERGENCY (UPS BACK BY GENERATOR)
-UPSEM	EMERGENCY/UPS FOR EMERG LIGHTING SYS

VOLTAGE LEVEL (SECOND DESIGNATOR)

H	277/480V, 3ø, 4W
L	120/208V, 3ø, 4W

SEQUENTIAL LEVEL NUMBER (THIRD DESIGNATOR)

1	GROUND LEVEL
2	MEZZANINE LEVEL
3	COUDE LEVEL
4	UTILITY LEVEL
5	CABLE WRAP LEVEL
6	CATWALK LEVEL
7	TELESCOPE LEVEL

SEQUENCIAL NUMBER (FORTH DESIGNATOR)

A	FIRST PANEL SAME VOLTAGE
B	SECOND PANEL SAME VOLTAGE

FAULT CURRENT TABLE

BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC
SB-UPSH4	7.2 SYM AMPS	SB-EMH4	10.8 SYM AMPS	SB-ENC AZM WP	16,842.3 SYM AMPS
SB-UPSH4A	16.6 SYM AMPS	SB-EML4B	24.9 SYM AMPS	SB-SH4	11,811.2 SYM AMPS
SB-UPSL4A	16.6 SYM AMPS	SB-ENC AZM 100	10.8 SYM AMPS		
SB-UPSL4B	16.6 SYM AMPS	SB-ENC AZM 30	24.7 SYM AMPS		
SB-UPSEMH4A	.4 SYM AMPS	SB-ENC AZM 30	0.8 SYM AMPS		

NOTES: A. ABOVE DUTY IS LESS THAN 0.5 AMPS
B. FAULT CURRENT, ARC FLASH AND VOLTAGE DROP CALCULATIONS WER PERFORMED WITH SKM SYSTEMS ANALYSIS, INC. POWER * TOOLS FOR WINDOWS (LATEST VERSION)

ENRICO B. LAOS
LICENSED PROFESSIONAL ENGINEER
No. 11778-E
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SIGNATURE 11/20/13

04/30/2014
EXPIRATION DATE OF LICENSE

ADVANCED TECHNOLOGY SOLAR TELESCOPE

SUPPORT AND OPERATIONS FACILITIES COMPLETION PACKAGE
HALEAKALĀ HIGH ALTITUDE OBSERVATORY- MAUI, HAWAI'I
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Revisions

Description	Date
1 ADDENDUM 17	11/20/13
2	
3	
4	
5	
6	

Drawn:	ELM
Checked:	EBL
Issue Date:	11/02/2012

Drawing Title

ELECTRICAL ONE LINE DIAGRAM - S&O BLDG EMERG, UPS, STANDBY POWER SHEET 2

Sheet Number

E705

M3PN 09077

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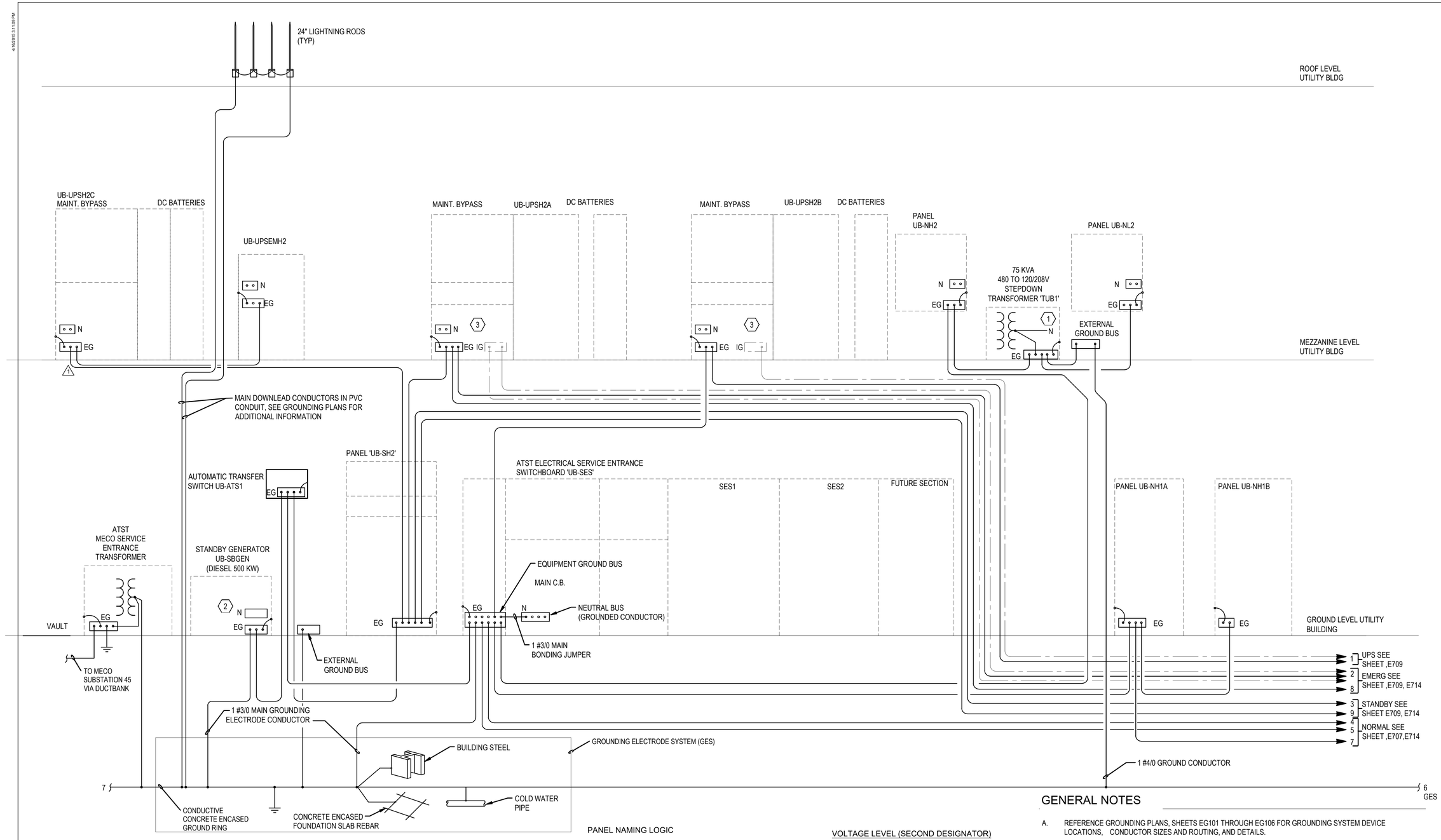

1 ELECTRICAL GROUNDING DIAGRAM 1 - UTILITY BLDG

SCALE: N.T.S.

KEYNOTES

1. PROVIDE GROUNDING AND BONDING FOR SEPARATELY DERIVED SYSTEM PER NEC ART. 250.30, TYPICAL.
2. PROVIDE STAND BY GENERATOR GROUNDING USING A 3-POLE AUTOMATIC TRANSFER SWITCH. CONFIGURATION PER NEC ARTICLE 250.20 (D)
3. PROVIDE DEDICATED ISOLATED GROUND BUS, IN ADDITION TO EQUIPMENT GROUND BUS.

PANEL NAMING LOGIC

EXAMPLE: PANEL SB-EM H 1 A

- LETTER SEQUENCE
- THIRD DESIGNATOR
- SECOND DESIGNATOR
- FIRST DESIGNATOR
- PREFIX

LOCATION - (PREFIX)

UB-	PANEL LOCATED IN UTILITY BUILDING
SB-	PANEL LOCATED IN S&O BUILDING

TYPE - (FIRST DESIGNATOR)

-N	NORMAL (UTILITY)
-S	STANDBY (GENERATOR)
-UPS	UNINTERRUPTIBLE POWER SUPPLY (UPS)
-EM	EMERGENCY (UPS BACK BY GENERATOR)
-UPSEM	EMERGENCY/UPS FOR EMERG LIGHTING SYS

VOLTAGE LEVEL (SECOND DESIGNATOR)

H	277/480V, 3ø, 4W
L	120/208V, 3ø, 4W

SEQUENCIAL LEVEL NUMBER (THIRD DESIGNATOR)

1	GROUND LEVEL
2	MEZZANINE LEVEL
3	COUDE LEVEL
4	UTILITY LEVEL
5	CABLE WRAP LEVEL
6	CATWALK LEVEL
7	TELESCOPE LEVEL

SEQUENCIAL NUMBER (FORTH DESIGNATOR)

A	FIRST PANEL SAME VOLTAGE
B	SECOND PANEL SAME VOLTAGE

GENERAL NOTES

A. REFERENCE GROUNDING PLANS, SHEETS EG101 THROUGH EG106 FOR GROUNDING SYSTEM DEVICE LOCATIONS, CONDUCTOR SIZES AND ROUTING, AND DETAILS.

B. ALL GROUNDING ELECTRODE CONDUCTOR AND MAIN JUMPER SIZES ARE #4/0 AWG SDBC UON.

C. ALL GROUNDING AND BONDING SHALL BE PROVIDED PER NEC ARTICLE 250.

D. REFERENCE ONE LINE DIAGRAMS AND FEEDER SCHEDULE, SHEETS E701 THROUGH 705 FOR EQUIPMENT GROUNDING CONDUCTOR SIZES.

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ARCHITECTURE
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Revisions

	Description	Date
1	ADDENDUM 13	7/31/13
2	ADDENDUM 17	11/20/13
3		
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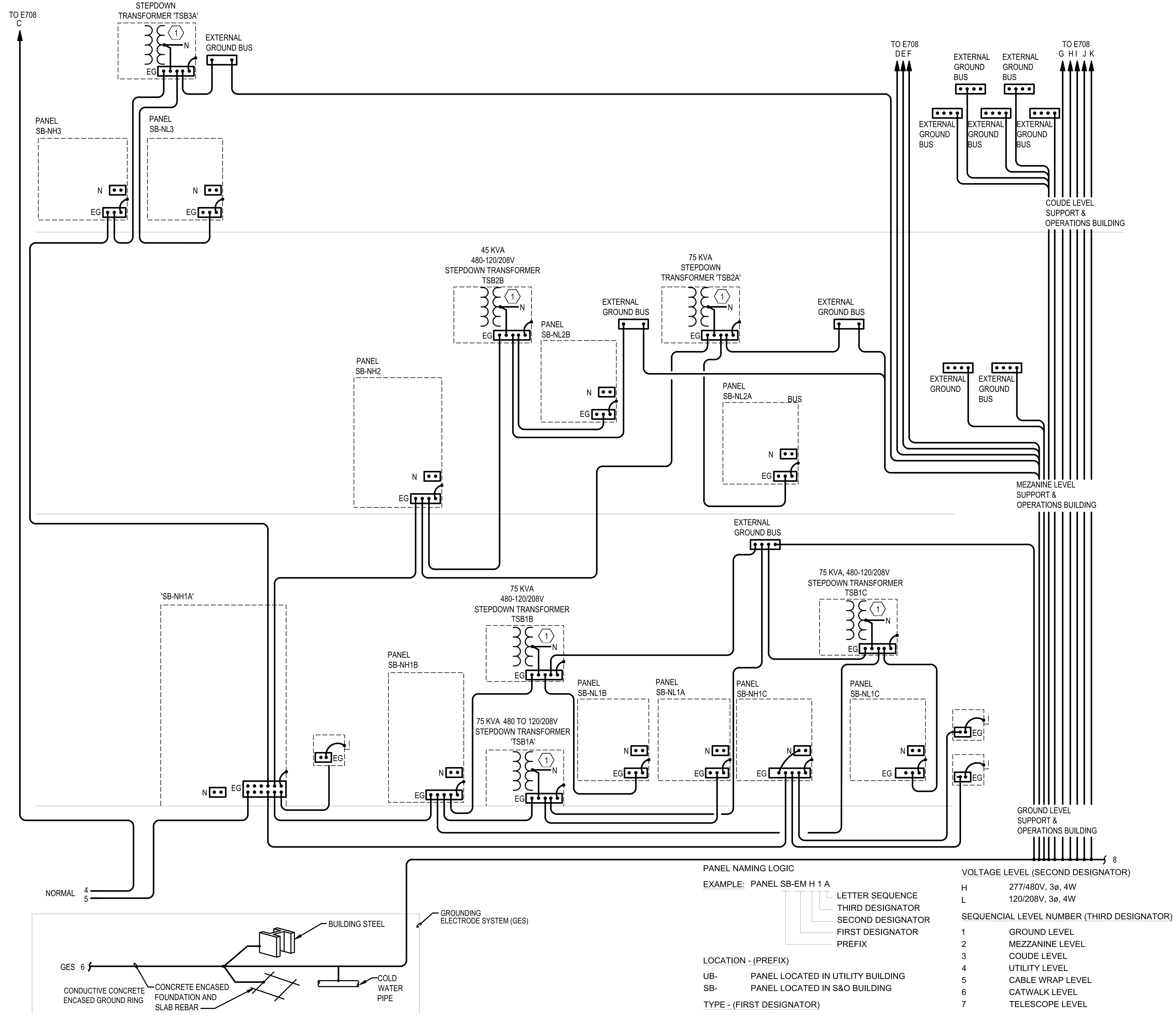
Drawing Title

1 ELECTRICAL GROUNDING DIAGRAM 1 - UTILITY BLDG

Sheet Number

E706

M3PN 09077



PANEL NAMING LOGIC

EXAMPLE: PANEL SB-EM H 1 A

- LETTER SEQUENCE
- THIRD DESIGNATOR
- SECOND DESIGNATOR
- FIRST DESIGNATOR
- PREFIX

LOCATION - (PREFIX)

UB-	PANEL LOCATED IN UTILITY BUILDING
SB-	PANEL LOCATED IN S&O BUILDING

TYPE - (FIRST DESIGNATOR)

-N	NORMAL (UTILITY)
-S	STANDBY (GENERATOR)
-UPS	UNINTERRUPTIBLE POWER SUPPLY (UPS)
-EM	EMERGENCY (UPS BACK BY GENERATOR)
-UPSEM	EMERGENCY/UPS FOR EMERG LIGHTING SYS

VOLTAGE LEVEL (SECOND DESIGNATOR)

H	277/480V, 3ø, 4W
L	120/208V, 3ø, 4W

SEQUENCIAL LEVEL NUMBER (THIRD DESIGNATOR)

1	GROUND LEVEL
2	MEZZANINE LEVEL
3	COUDE LEVEL
4	UTILITY LEVEL
5	CABLE WRAP LEVEL
6	CATWALK LEVEL
7	TELESCOPE LEVEL

SEQUENCIAL NUMBER (FORTH DESIGNATOR)

A	FIRST PANEL SAME VOLTAGE
B	SECOND PANEL SAME VOLTAGE

1 ELECTRICAL GROUNDING DIAGRAM - S & O BLDG NORMAL POWER SHEET 1

SCALE:N.T.S.

KEYNOTES

1 PROVIDE GROUNDING AND BONDING FOR SEPARATELY DERIVED SYSTEM PER NEC ART. 250.30, TYPICAL.

GENERAL NOTES

A. REFERENCE GROUNDING PLANS, SHEETS EG101 THROUGH EG106 FOR GROUNDING SYSTEM DEVICE LOCATIONS, CONDUCTOR SIZES AND ROUTING, AND DETAILS.

B. ALL GROUNDING ELECTRODE CONDUCTOR AND MAIN JUMPER SIZES ARE #4/0 AWG SDBC UON.

C. ALL GROUNDING AND BONDING SHALL BE PROVIDED PER NEC ARTICLE 250.

D. REFERENCE ONE LINE DIAGRAMS AND FEEDER SCHEDULE, SHEETS E701 THROUGH 705 FOR EQUIPMENT GROUNDING CONDUCTOR SIZES.

ENRICO B. LAOS
LICENSED PROFESSIONAL ENGINEER
No. 11778-E
HAWAII U.S.A.

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Drawing Title

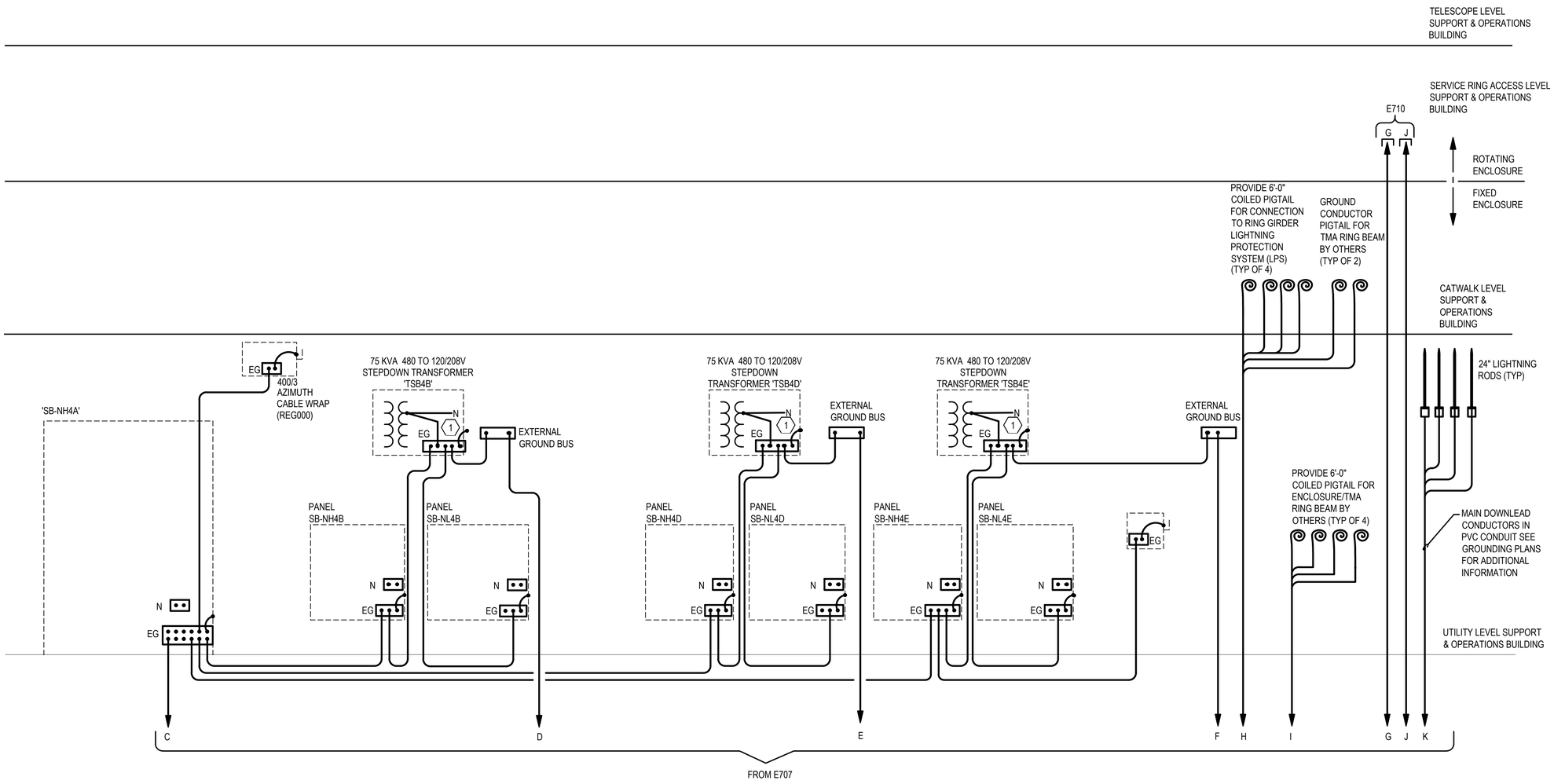
ELECTRICAL GROUNDING DIAGRAM - S & O BLDG NORMAL POWER SHEET 1

Sheet Number

E707

M3PN 09077

4/16/2015 3:11:15 PM



1 ELECTRICAL GROUNDING DIAGRAM - S & O BLDG NORMAL POWER SHEET 2

SCALE: N.T.S.

KEYNOTES

1 PROVIDE GROUNDING AND BONDING FOR SEPARATELY DERIVED SYSTEM PER NEC ART 250.30, TYPICAL.

GENERAL NOTES

A. REFERENCE GROUNDING PLANS, SHEETS EG101 THROUGH EG106 FOR GROUNDING SYSTEM DEVICE LOCATIONS, CONDUCTOR SIZES AND ROUTING, AND DETAILS.

B. ALL GROUNDING ELECTRODE CONDUCTOR AND MAIN JUMPER SIZES ARE #4/0 AWG SDBC UON.

C. ALL GROUNDING AND BONDING SHALL BE PROVIDED PER NEC ARTICLE 250.

D. REFERENCE ONE LINE DIAGRAMS AND FEEDER SCHEDULE, SHEETS E701 THROUGH 705 FOR EQUIPMENT GROUNDING CONDUCTOR SIZES.

PANEL NAMING LOGIC

EXAMPLE: PANEL SB-EM H 1 A

- A — LETTER SEQUENCE
- 1 — THIRD DESIGNATOR
- H — SECOND DESIGNATOR
- EM — FIRST DESIGNATOR
- SB — PREFIX

LOCATION - (PREFIX)

UB-	PANEL LOCATED IN UTILITY BUILDING
SB-	PANEL LOCATED IN S&O BUILDING

TYPE - (FIRST DESIGNATOR)

-N	NORMAL (UTILITY)
-S	STANDBY (GENERATOR)
-UPS	UNINTERRUPTIBLE POWER SUPPLY (UPS)
-EM	EMERGENCY (UPS BACK BY GENERATOR)
-UPSEM	EMERGENCY/UPS FOR EMERG LIGHTING SYS

VOLTAGE LEVEL (SECOND DESIGNATOR)

H	277/480V, 3ø, 4W
L	120/208V, 3ø, 4W

SEQUENCIAL LEVEL NUMBER (THIRD DESIGNATOR)

1	GROUND LEVEL
2	MEZZANINE LEVEL
3	COUDE LEVEL
4	UTILITY LEVEL
5	CABLE WRAP LEVEL
6	CATWALK LEVEL
7	TELESCOPE LEVEL

SEQUENCIAL NUMBER (FORTH DESIGNATOR)

A	FIRST PANEL SAME VOLTAGE
B	SECOND PANEL SAME VOLTAGE

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	Description	Date
1	ADDENDUM 17	11/20/13
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Drawing Title

ELECTRICAL GROUNDING DIAGRAM - S & O BLDG NORMAL POWER SHEET 2

Sheet Number

E708

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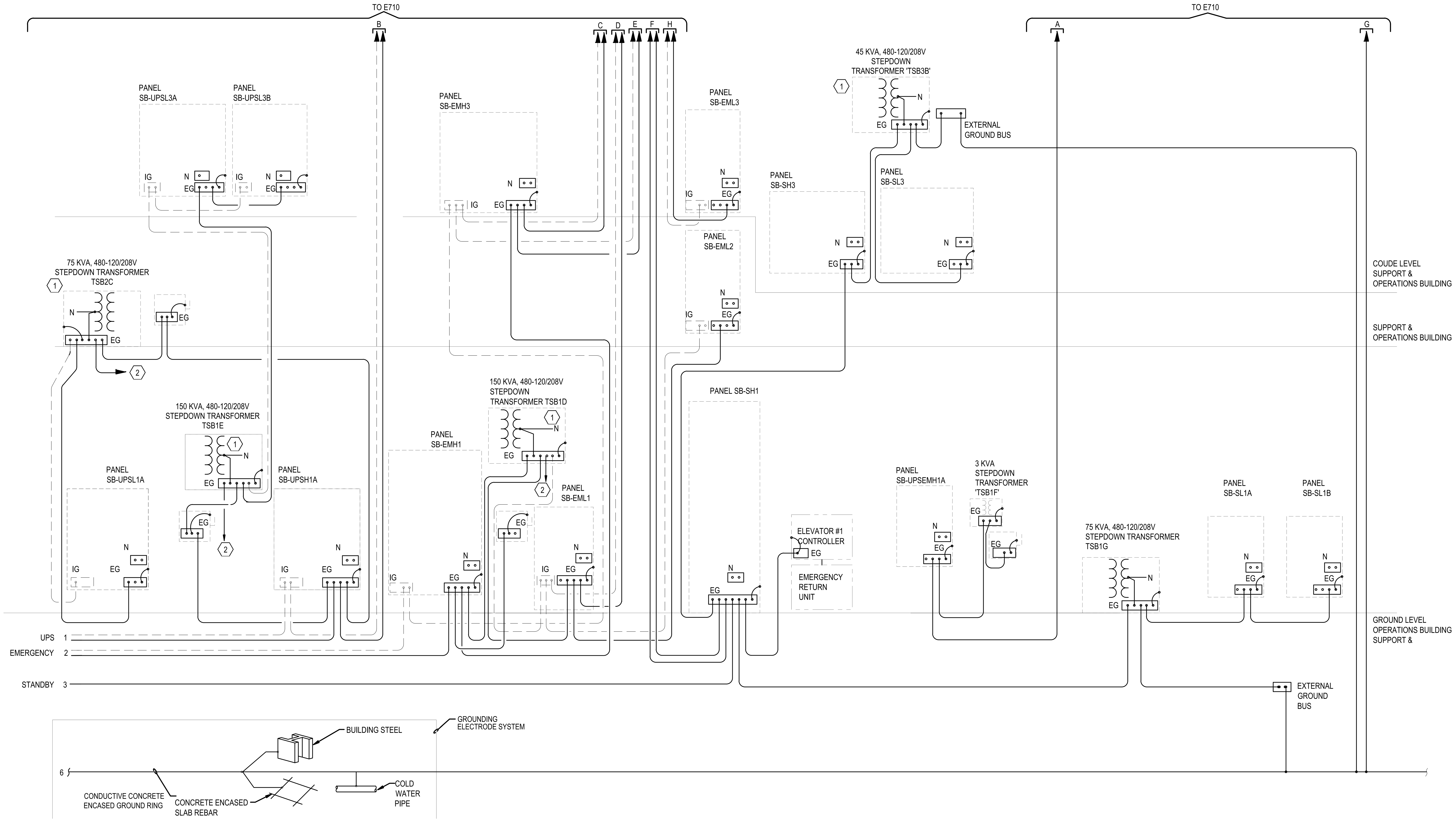

ELECTRICAL GROUNDING DIAGRAM - S & O BLDG EMERG, UPS, STANDBY POWER SHEET 1

1 SCALE:N.T.S.

GENERAL NOTES

A. REFERENCE GROUNDING PLANS, SHEETS EG101 THROUGH EG106 FOR GROUNDING SYSTEM DEVICE LOCATIONS, CONDUCTOR SIZES AND ROUTING, AND DETAILS.

B. ALL GROUNDING ELECTRODE CONDUCTOR AND MAIN JUMPER SIZES ARE #4/0 AWG SDBC UON.

C. ALL GROUNDING AND BONDING SHALL BE PROVIDED PER NEC ARTICLE 250.

D. REFERENCE ONE LINE DIAGRAMS AND FEEDER SCHEDULE, SHEETS E701 THROUGH E705 FOR EQUIPMENT GROUNDING CONDUCTOR SIZES.

KEYNOTES

1 PROVIDE GROUNDING AND BONDING FOR SEPARATELY DERIVED SYSTEM PER NEC ART. 250.30, TYPICAL.

2 PROVIDE GROUNDING ELECTRODE CONDUCTOR, ROUTE AND CONNECT TO CLOSEST EXTERNAL GROUND BUS.

PANEL NAMING LOGIC

EXAMPLE: PANEL SB-EM H 1 A

- LETTER SEQUENCE
- THIRD DESIGNATOR
- SECOND DESIGNATOR
- FIRST DESIGNATOR
- PREFIX

LOCATION - (PREFIX)

UB-	PANEL LOCATED IN UTILITY BUILDING
SB-	PANEL LOCATED IN S&O BUILDING

TYPE - (FIRST DESIGNATOR)

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H	277/480V, 3ø, 4W
L	120/208V, 3ø, 4W

SEQUENCIAL LEVEL NUMBER (THIRD DESIGNATOR)

1	GROUND LEVEL
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3	COUDE LEVEL
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5	CABLE WRAP LEVEL
6	CATWALK LEVEL
7	TELESCOPE LEVEL

SEQUENCIAL NUMBER (FORTH DESIGNATOR)

A	FIRST PANEL SAME VOLTAGE
B	SECOND PANEL SAME VOLTAGE

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Drawing Title: ELECRICAL GROUNDING DIAGRAM - S & O BLDG EMERG, UPS, STANDBY POWER SHEET 1

Sheet Number: E709

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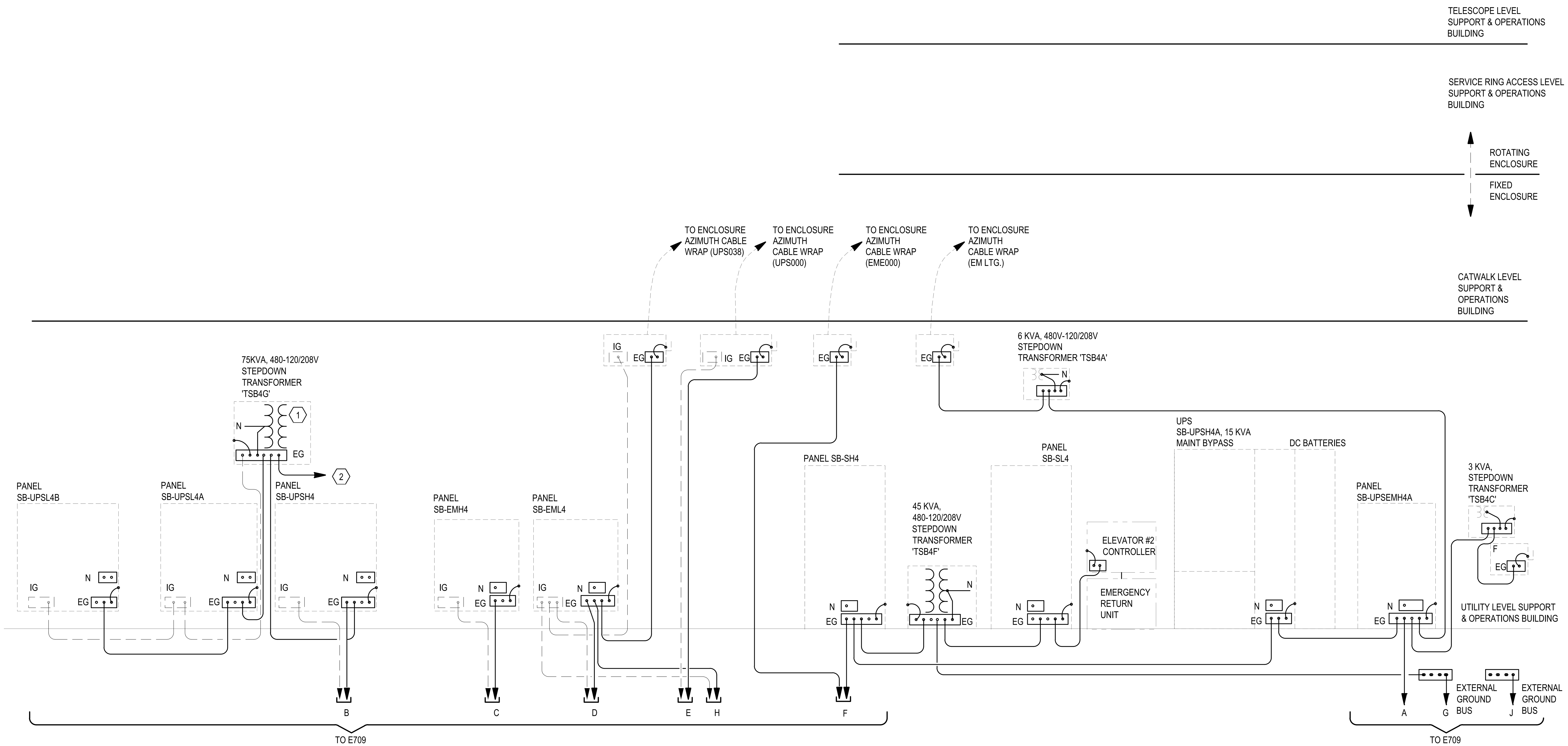

ELECTRICAL GROUNDING DIAGRAM - S & O BLDG EMERG, UPS, STANDBY POWER SHEET 2

1 SCALE: N.T.S.

KEYNOTES

1 PROVIDE GROUNDING AND BONDING FOR SEPARATELY DERIVED SYSTEM PER NEC ART 250.30, TYPICAL.

2 PROVIDE GROUNDING ELECTRODE CONDUCTOR, ROUTE AND CONNECT TO CLOSEST EXTERNAL GROUND BUS.

GENERAL NOTES

A. REFERENCE GROUNDING PLANS, SHEETS EG101 THROUGH EG106 FOR GROUNDING SYSTEM DEVICE LOCATIONS, CONDUCTOR SIZES AND ROUTING, AND DETAILS.

B. ALL GROUNDING ELECTRODE CONDUCTOR AND MAINJUMPER SIZES ARE #4/0 AWG SDBC UON.

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H	277/480V, 3ø, 4W
L	120/208V, 3ø, 4W

SEQUENCIAL LEVEL NUMBER (THIRD DESIGNATOR)

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2	MEZZANINE LEVEL
3	COUDE LEVEL
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5	CABLE WRAP LEVEL
6	CATWALK LEVEL
7	TELESCOPE LEVEL

SEQUENCIAL NUMBER (FORTH DESIGNATOR)

A	FIRST PANEL SAME VOLTAGE
B	SECOND PANEL SAME VOLTAGE

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Drawing Title

ELECTRICAL GROUNDING DIAGRAM - S & O BLDG EMERG, UPS, STANDBY POWER SHEET 2

Sheet Number

E710

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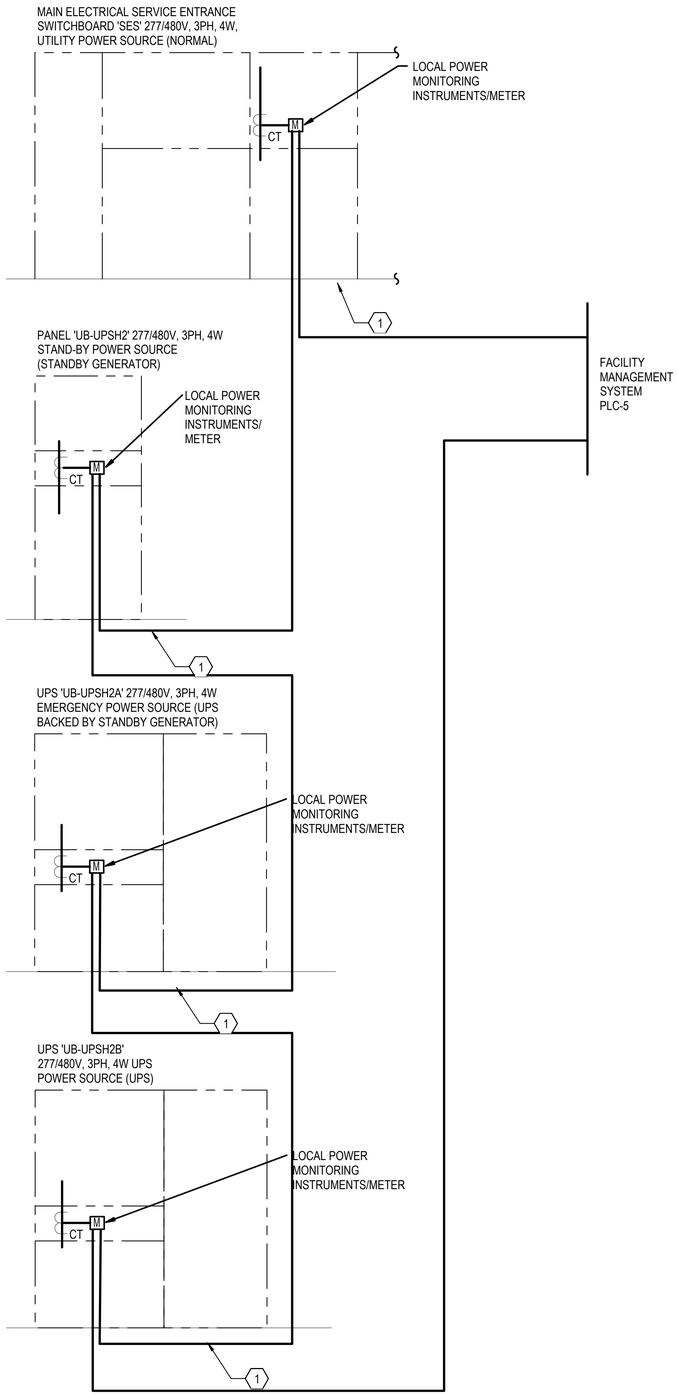
UTILITY BUILDING



1 POWER MONITORING AND CONTROL DIAGRAM

SCALE:N.T.S.

KEYNOTES

1 PROVIDE DAISY-CHAIN LOOP COMMUNICATIONS MONITORING INTERFACE CONNECTION CABLES ETHERNET TCP-IP DATA TRANSMISSION PROTOCOL IN 3/4"C.

GENERAL NOTES

A. REFER TO SPECIFICATION SECTION 16215, ELECTRICAL POWER MONITORING AND CONTROL SYSTEM FOR DETAILS.

B. ALL POWER MONITORING AND CONTROL SYSTEM CIRCUITS SHALL BE IN 3/4" CONDUIT MINIMUM.

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Drawing Title

POWER MONITORING AND CONTROL DIAGRAM

Sheet Number

E711

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ELECTRICAL POWER MONITORING AND CONTROL SCHEDULE - 1 (NORMAL)

EQUIPMENT DESIGNATION	CIRCUIT OR COMPONENT	POWER MONITORING AND CONTROL SYSTEM FUNCTIONS		REMARKS
CHILLER CH-01	CH-01 LOCAL CONTROL PANEL	EQUIPMENT ON/OFF STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
CHILLER CH-02	CH-02 LOCAL CONTROL PANEL	EQUIPMENT ON/OFF STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
CHILLER CH-03	CH-03 LOCAL CONTROL PANEL	EQUIPMENT ON/OFF STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
CHILLER CH-04	CH-04 LOCAL CONTROL PANEL	EQUIPMENT ON/OFF STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
CHILLER CH-05	CH-05 LOCAL CONTROL PANEL	EQUIPMENT ON/OFF STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
CHILLER CH-06	CH-06 LOCAL CONTROL PANEL	EQUIPMENT ON/OFF STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
AIR HANDLER AHU-02	AHU-02 LOCAL CONTROL PANEL	EQUIPMENT ON/OFF STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)

NOTES:
1. INCLUDE INSTRUMENT TRANSFORMERS. FOR CT RATIO, USE BREAKERS SIZE, UNLES OTHERWISE INDICATED.
2. COMPLY WITH NFPA 110.
3. LOAD TRIP PRIORITY IS BASED ON CONTROL SCHEDULE CIRCUIT LIST ORDER.
VERIFY LOAD LIST TRIP/SHED WITH ATST POC DURING SYSTEM PROGRAMMING PERIOD.

ELECTRICAL POWER MONITORING AND CONTROL SCHEDULE - 2 (STANDBY)

EQUIPMENT DESIGNATION	CIRCUIT OR COMPONENT	POWER MONITORING AND CONTROL SYSTEM FUNCTIONS		REMARKS
PANEL SB-SH1	2	BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
PANEL SB-SH3	2	BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
PANEL SB-SH4	2	BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
PANEL SB-SL3	2	BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
PANEL SB-SL1A	4	BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
PANEL SB-SL1B	4	BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
PANEL SB-SL4	4	BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)

NOTES:
1. INCLUDE INSTRUMENT TRANSFORMERS. FOR CT RATIO, USE BREAKERS SIZE, UNLES OTHERWISE INDICATED.
2. COMPLY WITH NFPA 110.
3. LOAD TRIP PRIORITY IS BASED ON CONTROL SCHEDULE CIRCUIT LIST ORDER.
VERIFY LOAD LIST TRIP/SHED WITH ATST POC DURING SYSTEM PROGRAMMING PERIOD.

ELECTRICAL POWER MONITORING AND CONTROL SCHEDULE -3 (EMERGENCY)

EQUIPMENT DESIGNATION	CIRCUIT OR COMPONENT	POWER MONITORING AND CONTROL SYSTEM FUNCTIONS		REMARKS
PANEL SB-EMH1	1	BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
PANEL SB-EMH3	1	BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
PANEL SB-EMH4	1	BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
PANEL SB-EML1	1			
PANEL SB-EML2	4	BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
PANEL SB-EML3	4	BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
		BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
		BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
		BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)

NOTES:
1. INCLUDE INSTRUMENT TRANSFORMERS. FOR CT RATIO, USE BREAKERS SIZE, UNLES OTHERWISE INDICATED.
2. COMPLY WITH NFPA 110.
3. LOAD TRIP PRIORITY IS BASED ON CONTROL SCHEDULE CIRCUIT LIST ORDER.
VERIFY LOAD LIST TRIP/SHED WITH ATST POC DURING SYSTEM PROGRAMMING PERIOD.

ELECTRICAL POWER MONITORING AND CONTROL SCHEDULE -4 (UPS)

EQUIPMENT DESIGNATION	CIRCUIT OR COMPONENT	POWER MONITORING AND CONTROL SYSTEM FUNCTIONS		REMARKS
PANEL SB-UPSH1A	2	BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)
PANEL SB-UPSL4A	3	BREAKER OPEN/TRIP/CLOSE STATUS	TRIP/ALARM WHEN DEMAND LOAD EXCEEDS SET POINT (NOTE 3)	USE ADDRESSABLE RELAY (NOTE 1)

NOTES:
1. INCLUDE INSTRUMENT TRANSFORMERS. FOR CT RATIO, USE BREAKERS SIZE, UNLES OTHERWISE INDICATED.
2. COMPLY WITH NFPA 110.
3. LOAD TRIP PRIORITY IS BASED ON CONTROL SCHEDULE CIRCUIT LIST ORDER.
VERIFY LOAD LIST TRIP/SHED WITH ATST POC DURING SYSTEM PROGRAMMING PERIOD.

KEYNOTES

1 REFER TO SPECIFIC PANEL SCHEDULE FOR EXACT BRANCH CIRCUITS TO BE CONTROLLED, SEE SHEET EP605.

2 REFER TO SPECIFIC PANEL SCHEDULE FOR EXACT BRANCH CIRCUITS TO BE CONTROLLED, SEE SHEET EP606.

3 REFER TO SPECIFIC PANEL SCHEDULE FOR EXACT BRANCH CIRCUITS TO BE CONTROLLED, SEE SHEET EP607.

4 REFER TO SPECIFIC PANEL SCHEDULE FOR EXACT BRANCH CIRCUITS TO BE CONTROLLED, SEE SHEET EP609.

GENERAL NOTES

A. REFER TO SPECIFICATION SECTION 16215, ELECTRICAL POWER MONITORING AND CONTROL SYSTEM FOR DETAILS.

DESCOPED

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Drawing Title
POWER MONITORING AND CONTROL SCHEDULES

Sheet Number
E712

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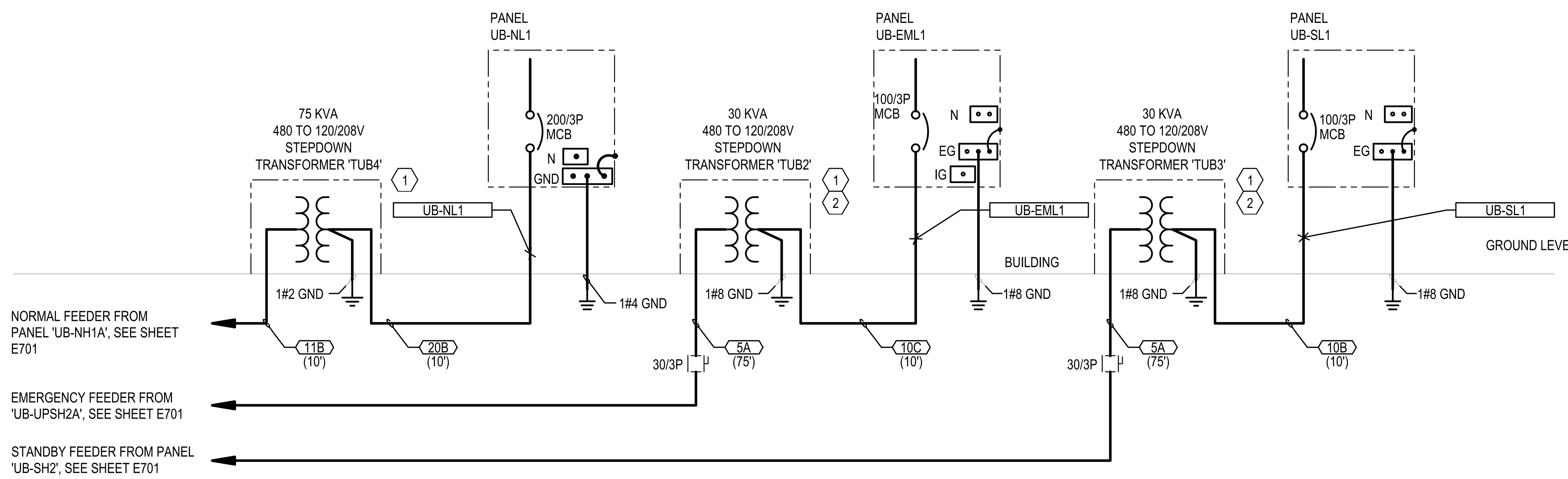
	3-PHASE, 3-WIRE + GROUND				3-PHASE, 4-WIRE + GROUND				3-PHASE, 4-WIRE (200% NEUT) + GROUND + IG					
AMPERES	SYMB	CONDUIT	PHASE & NEUTRAL WIRE	GROUND WIRE	SYMB	CONDUIT	PHASE & NEUTRAL WIRE	GROUND WIRE	SYMB	CONDUIT	PHASE WIRES	NEUTRAL WIRES	GROUND WIRE	ISOLATED GROUND WIRE
20	2A	3/4"	3 #12	#12	2B	3/4"	4 #12	#12						
30	3A	3/4"	3 #10	#10	3B	3/4"	4 #10	#10						
50	5A	1"	3 #8	#10	5B	1"	4 #8	#10						
60	6A	1-1/4"	3 #6	#10	6B	1-1/4"	4 #6	#10						
70	7A	1-1/4"	3 #4	#8	7B	1-1/4"	4 #4	#8						
100	10A	1-1/4"	3 #2	#8	10B	1-1/4"	4 #2	#8	10C	2"	3 #2	2 #2	#8	#8
110	11A	1-1/2"	3 #2	#6	11B	1-1/2"	4 #2	#6						
125	12A	2"	3 #1	#6	12B	2"	4 #1	#6						
150	15A	2"	3 #1/0	#6	15B	2"	4 #1/0	#6						
200	20A	2-1/2"	3 #3/0	#6	20B	2-1/2"	4 #3/0	#6						
225	22A	2-1/2"	3 #4/0	#4	22B	2-1/2"	4 #4/0	#4	22C	2-1/2"	3 #4/0	2 #4/0	#4	#4
250	25A	3"	3 #250 KCM	#4	25B	3"	4 #250 KCM	#4						
300	30A	3"	3 #350 KCM	#4	30B	3"	4 #350 KCM	#4						
400	40A	3"	3 #600 KCM	#2	40B	4"	4 #600 KCM	#2	40C	4"	3 #600 KCM	2 #600 KCM	#2	#2
600	60A	2 SETS 2-1/2"C., 3 #350KCM, 1 #1/0 GND			60B	2 SETS 3"C., 4 #350KCM, 1 #1/0 GND								
800	80A	2 SETS 3"C., 3 #600KCM, 1 #1/0 GND			80B	2 SETS 4"C., 4 #600KCM, 1 #1/0 GND								
1600	160A	4 SETS 3"C., 3 #600KCM, 1 #4/0 GND			160B	4 SETS 4"C., 4 #600KCM, 1 #4/0 GND								
2000	200A	6 SETS 3"C., 3 #500KCM, 1 #500KCM GND			200B	6 SETS 4"C., 4 #500KCM, 1 #500KCM GND								
3000	300A	8 SETS 3"C., 3 #500KCM, 1 #500KCM GND 2 SPARE			300B	8 SETS 4"C., 4 #500KCM, 1 #500KCM GND								

600 VOLT FEEDER SCHEDULE



1 ELECTRICAL ONE LINE DIAGRAM 2 - UTILITY BUILDING

SCALE: N.T.S.

FAULT CURRENT TABLE					
BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC
UB-NL1	5400 SYM AMPS				
UB-SL1	5000 SYM AMPS				
UB-EML1	24.6 SYM AMPS				

NOTES:

A. FAULT CURRENT, ARC FLASH AND VOLTAGE DROP CALCULATIONS WER PERFORMED WITH SKM SYSTEMS ANALYSIS, INC. POWER * TOOLS FOR WINDOWS (LATEST VERSION)

PANEL NAMING LOGIC

EXAMPLE: PANEL SB-EM H 1 A

- LETTER SEQUENCE
- THIRD DESIGNATOR
- SECOND DESIGNATOR
- FIRST DESIGNATOR
- PREFIX

LOCATION - (PREFIX)

UB-	PANEL LOCATED IN UTILITY BUILDING
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6	CATWALK LEVEL
7	TELESCOPE LEVEL

SEQUENCIAL NUMBER (FORTH DESIGNATOR)

A	FIRST PANEL SAME VOLTAGE
B	SECOND PANEL SAME VOLTAGE

KEYNOTES

1 PROVIDE K-13 RATED DRY TYPE TRANSFORMER PER SPECIFICATION 16461.
2 EXTERIOR WEST DOGHOUSE

ADVANCED TECHNOLOGY SOLAR TELESCOPE

SUPPORT AND OPERATIONS FACILITIES COMPLETION PACKAGE
HALEAKALĀ HIGH ALTITUDE OBSERVATORY- MAUI, HAWAI'I
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Drawn: RJD
Checked: EBL
Issue Date: 07/31/2013

Drawing Title

ELECTRICAL ONE LINE DIAGRAM 2 - UTILITY BLDG

Sheet Number

E713

M3PN 09077

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04/30/2014

SIGNATURE

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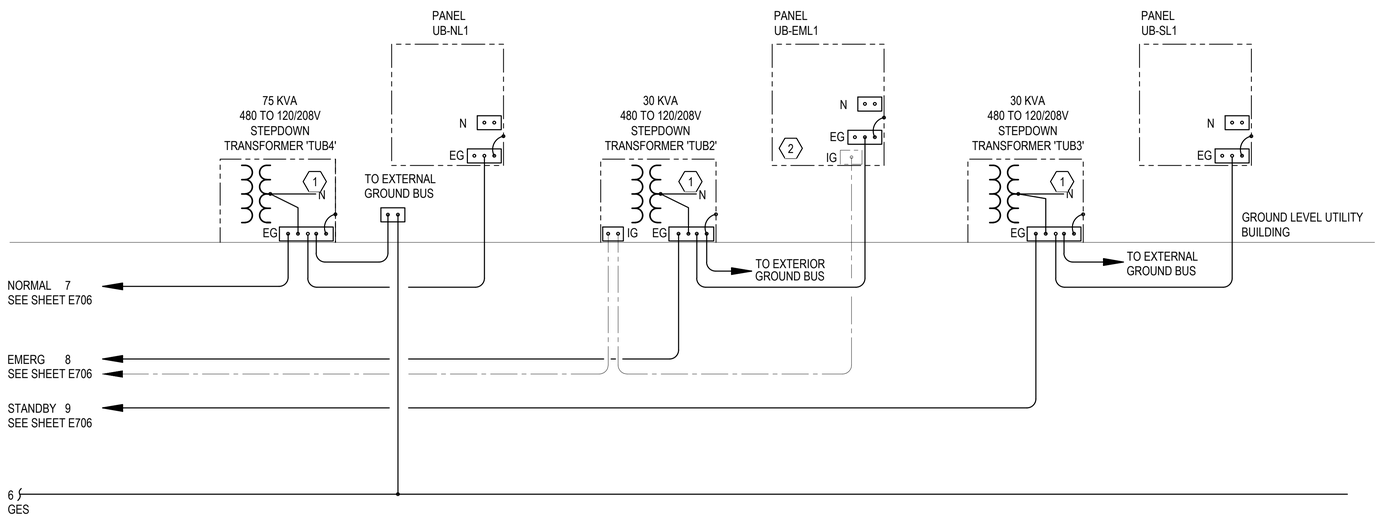

1 ELECTRICAL GROUNDING DIAGRAM 2 - UTILITY BLDG

SCALE: N.T.S.

PANEL NAMING LOGIC

EXAMPLE: PANEL SB-EM H 1 A

- A — LETTER SEQUENCE
- 1 — THIRD DESIGNATOR
- H — SECOND DESIGNATOR
- EM — FIRST DESIGNATOR
- SB- — PREFIX

LOCATION - (PREFIX)

UB-	PANEL LOCATED IN UTILITY BUILDING
SB-	PANEL LOCATED IN S&O BUILDING

TYPE - (FIRST DESIGNATOR)

-N	NORMAL (UTILITY)
-S	STANDBY (GENERATOR)
-UPS	UNINTERRUPTIBLE POWER SUPPLY (UPS)
-EM	EMERGENCY (UPS BACK BY GENERATOR)
-UPSEM	EMERGENCY/UPS FOR EMERG LIGHTING SYS

VOLTAGE LEVEL (SECOND DESIGNATOR)

H	277/480V, 3ø, 4W
L	120/208V, 3ø, 4W

SEQUENCIAL LEVEL NUMBER (THIRD DESIGNATOR)

1	GROUND LEVEL
2	MEZZANINE LEVEL
3	COUDE LEVEL
4	UTILITY LEVEL
5	CABLE WRAP LEVEL
6	CATWALK LEVEL
7	TELESCOPE LEVEL

SEQUENCIAL NUMBER (FORTH DESIGNATOR)

A	FIRST PANEL SAME VOLTAGE
B	SECOND PANEL SAME VOLTAGE

KEYNOTES

1 PROVIDE GROUNDING AND BONDING FOR SEPARATELY DERIVED SYSTEM PER NEC ART. 250.30, TYPICAL.

2 PROVIDED DEDICATED ISOLATED GROUND BUS, IN ADDITION TO EQUIPMENT GROUND BUS, PER SPECIFICATION 16442.

GENERAL NOTES

A. REFERENCE GROUNDING PLANS, SHEETS EG101 THROUGH EG106 FOR GROUNDING SYSTEM DEVICE LOCATIONS, CONDUCTOR SIZES AND ROUTING, AND DETAILS.

B. ALL GROUNDING CONDUCTOR AND JUMPER SIZES ARE #4/0 AWG SDBC UON.

C. ALL GROUNDING AND BONDING SHALL BE PROVIDED PER NEC ARTICLE 250.

D. REFERENCE ONE LINE DIAGRAMS AND FEEDER SCHEDULE, SHEETS E701 THROUGH 705 FOR EQUIPMENT GROUNDING CONDUCTOR SIZES.

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ELECTRICAL GROUNDING DIAGRAM 2 - UTILITY BLDG

Sheet Number

E714

M3PN 09077

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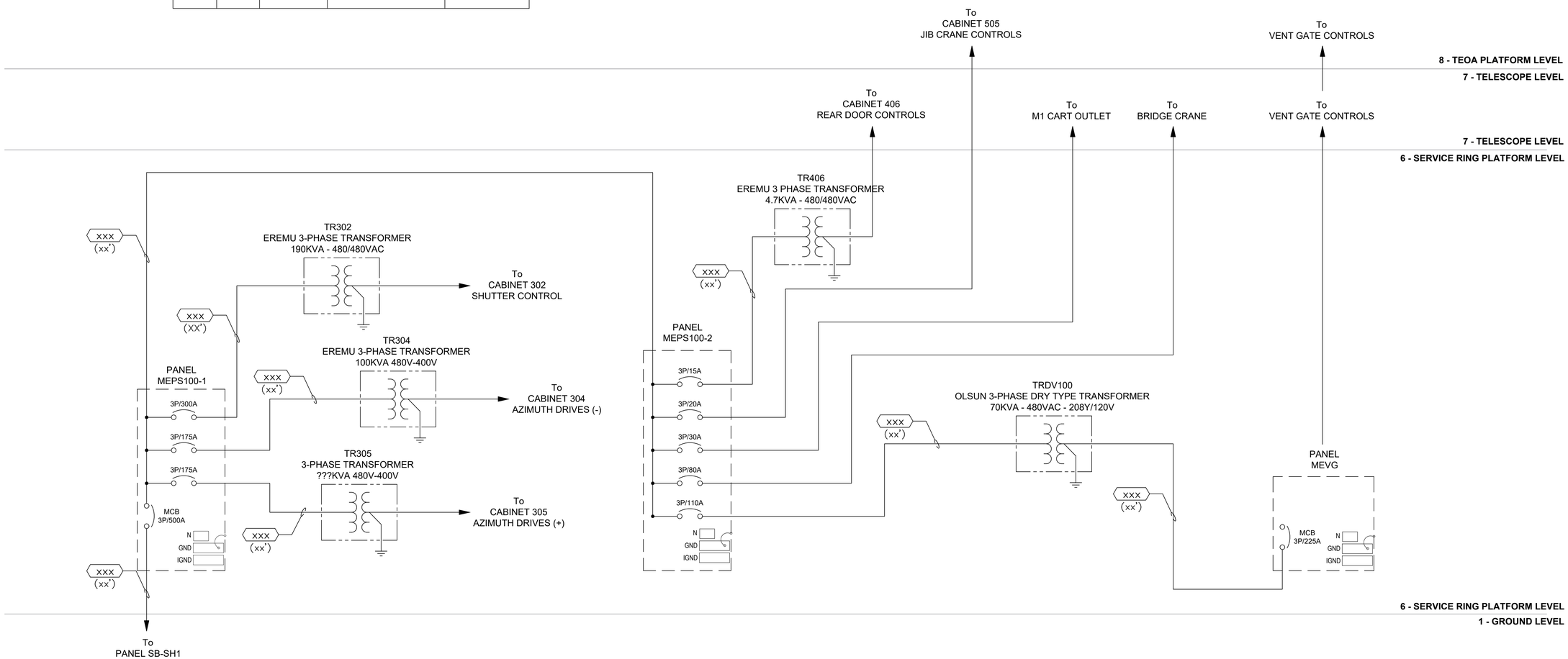
600 VOLT FEEDER SCHEDULE

3-PHASE, 3-WIRE + GROUND				
AMPS	CODE	CONDUIT	PHASE & NEUTRAL WIRE	GROUND



ELECTRICAL ONE LINE DIAGRAM - ENCLOSURE POWER DISTRIBUTION POWER SHEET 1

SCALE:N.T.S.

PANEL NAMING LOGIC
MEPS MAIN GENERATOR-BACKED POWER SWITCHBOARD
MEVG MAIN VENT GATES PANELBOARD

FAULT CURRENT TABLE

BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC
MEPS100-1					
MEPS100-2					
MEVG					

NOTES:
A. ABOVE DUTY IS LESS THAN 0.5 AMPS
B. FAULT CURRENT, ARC FLASH AND VOLTAGE DROP CALCULATIONS WER PERFORMED WITH SKM SYSTEMS ANALYSIS, INC. POWER * TOOLS FOR WINDOWS (LATEST VERSION)

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Issue Date: 11/02/2012

Drawing Title
ELECTRICAL ONE LINE DIAGRAM - ENCLOSURE STANDBY POWER

Sheet Number
E715

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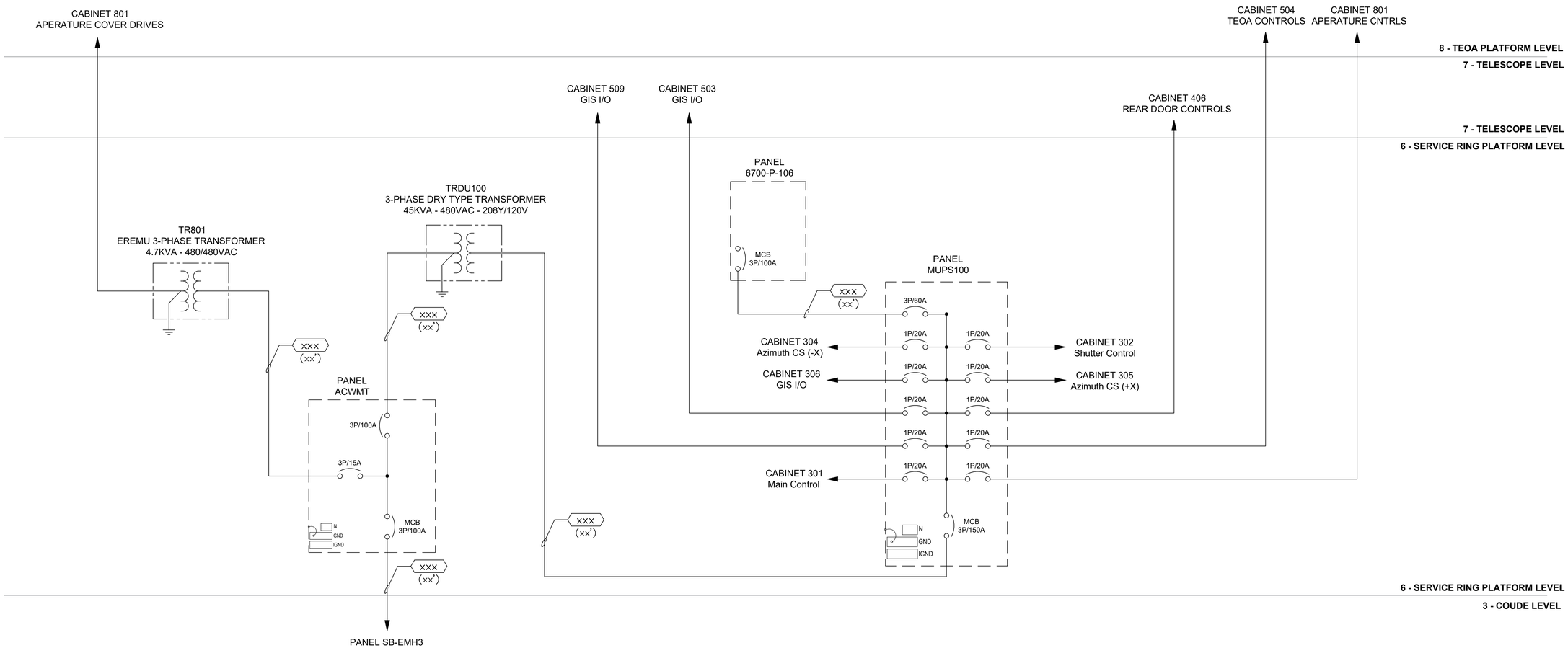
KEYNOTES

600 VOLT FEEDER SCHEDULE

3-PHASE, 3-WIRE + GROUND				
AMPS	CODE	CONDUIT	PHASE & NEUTRAL WIRE	GROUND



ELECTRICAL ONE LINE DIAGRAM - ENCLOSURE POWER DISTRIBUTION POWER SHEET 2

SCALE:N.T.S.

PANEL NAMING LOGIC

ACWMT - AZIMUTH CABLE WRAP MOVING TERMINAL BOARD

MUPS100 - MAIN UPS/GENERATOR BACKED PANEL BOARD

FAULT CURRENT TABLE

BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC
MUPS100					
ACWMT					

NOTES:
A. ABOVE DUTY IS LESS THAN 0.5 AMPS
B. FAULT CURRENT, ARC FLASH AND VOLTAGE DROP CALCULATIONS WER PERFORMED WITH SKM SYSTEMS ANALYSIS, INC. POWER * TOOLS FOR WINDOWS (LATEST VERSION)

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ELECTRICAL ONE LINE DIAGRAM - ENCLOSURE UPS & GENERATOR BACKED

Sheet Number

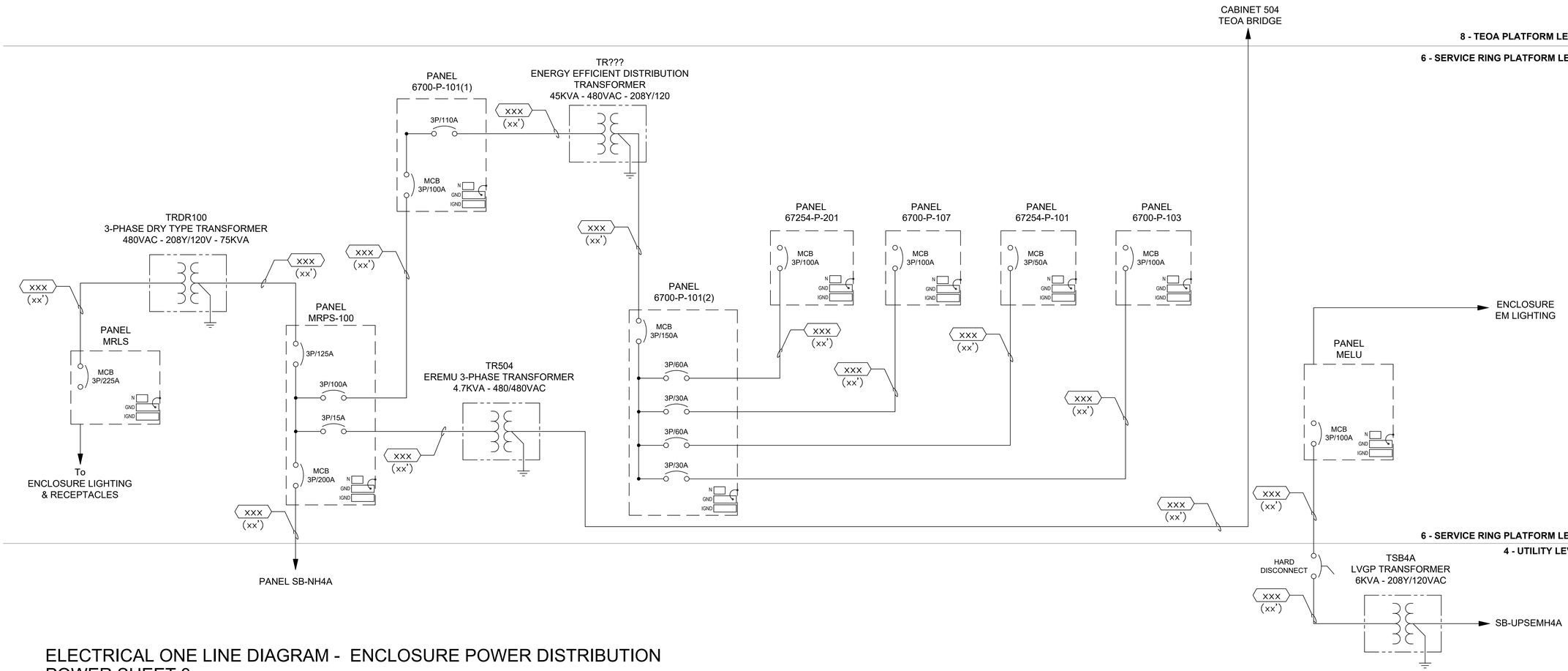
E716

4/25/2024 2:00:03 PM

600 VOLT FEEDER SCHEDULE

3-PHASE, 3-WIRE + GROUND				
AMPS	CODE	CONDUIT	PHASE & NEUTRAL WIRE	GROUND

KEYNOTES



ELECTRICAL ONE LINE DIAGRAM - ENCLOSURE POWER DISTRIBUTION POWER SHEET 3

SCALE:N.T.S.

PANEL NAMING LOGIC

MRLS - MAIN NORMAL POWER LIGHTING AND DISTRIBUTION PANEL BOARD
MRPS100 - MAIN NORMAL POWER PANEL BOARD
67XXX - THERMAL NORMAL POWER PANEL BOARD
MELU - EMERGENCY LIGHTING UPS GENERATOR-BACKED PANEL BOARD

FAULT CURRENT TABLE					
BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC	BUS NAME	AVAILABLE AIC
MRLS		6700P-107			
MRPS100		67254P-101			
6700P-101(1)		6700P-103			
6700P-101(2)		MELU			
67254P-201					

NOTES:
A. ABOVE DUTY IS LESS THAN 0.5 AMPS
B. FAULT CURRENT, ARC FLASH AND VOLTAGE DROP CALCULATIONS WER PERFORMED WITH SKM SYSTEMS ANALYSIS, INC. POWER * TOOLS FOR WINDOWS (LATEST VERSION)

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ELECTRICAL ONE LINE DIAGRAM - ENCLOSURE NORMAL & LIGHTING POWER

Sheet Number

E717

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